

IMPORTANT BIRD AND BIODIVERSITY AREAS IN INDIA

Priority sites for Conservation

Revised and updated 2nd Edition Vol. I



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**Second Edition: Revised and Updated
Volume I**

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ANDHRA PRADESH AND TELANGANA



PRAMOD PATIL

Only the protected grassland of Rollapadu Bustard Sanctuary is left now, most of the Great Indian Bustards have disappeared

IN-AP

Andhra Pradesh (12° 40'–19° 50' N and 76° 45'–84° 40' E) was the fifth largest state in India (before Telangana State was carved out of it), with a geographical area of 27.51 million ha, 8.37% of the total area of India.

On June 2, 2014 Andhra Pradesh was split in two states; Seemandhra (still popularly known as Andhra Pradesh) and Telangana. Seemandhra consists of Anantapur, Chittoor, Cuddapah, East Godavari, Guntur, Krishna, Kurnool, Prakasam, Nellore, Srikakulam, Visakhapatnam, Vizianagaram and West Godavari districts. In this book, we are including both Andhra (Seemandhra) and Telangana in one chapter.

Andhra Pradesh borders Telangana in the north-west, Chhattishgarh in the north, Odisha in the north-east, Karnataka in the west, Tamil Nadu in the south and the Bay of Bengal in the east. A small enclave of 30 sq. km of Yanam, a district of Puducherry, lies south of Kakinada in the Godavari delta to the northeast of the State. The present Andhra Pradesh has two distinct regions: the Coastal Andhra region (Andhra) and the interior region (Rayalaseema) comprising 13 districts (nine in Coastal Andhra and four in Rayalaseema). Visakhapatnam is the largest city and a commercial hub of the State after the

birth of Telangana. As of 2011 Census of India, the State had a population of 49,386,799 with a population density of 308 per sq. km. The total population constitutes 70.4% of rural population with 34,776,389 inhabitants and 29.6% of urban population with 14,610,410 inhabitants.

The new state of Telangana was carved out of Andhra Pradesh on June 2, 2014 and is the 29th state of India, with the city of Hyderabad as its capital, which it shares with Andhra Pradesh. Telangana is bordered by Maharashtra and Chhattishgarh to the north, Karnataka to the west and Andhra Pradesh to the south, east and northeast. It shares a small border with Odisha too. https://en.wikipedia.org/wiki/Telangana_-_cite_note-State_profile-4 As the twelfth largest state in India. Telangana has an area of 114,840 sq. km. with a population of 35,286,757 (2011 census). Its major cities include Hyderabad, Warangal, Nizamabad, Karimnagar, Ramagundam and Khammam.

The undivided Andhra Pradesh is situated in the tropical zone. It has 16% of its area under forest. It has a coastline of about 972 km on its eastern side. The altitude of the land varies from the sea level along the coastal plains to about 1,500 m in the Eastern Ghats. The average altitude of the plains is about 500 m. The land generally slopes



Not much attention is given to protect habitats such as boulder-covered scrub forest which is the habitat of endemic Yellow-throated Bulbul *Pycnonotus xantholaemus*

from the northwest to the southeast. The major rivers are the Godavari, Krishna, Tungabhadra and Pennar. Besides these, there are many medium and smaller rivers. The State has a very large freshwater lake at Kolleru and several fairly large waterbodies, for example Pakhal, Ramappa, Pocharam, Nelapattu, Osman Sagar and Himayat Sagar. There is an extensive saltwater lagoon called Pulicat on the extreme northern coast. There are also the Naupada swamps and the Coringa Creek, the Krishna Mangroves, the Godavari Mangroves and several reservoirs (Taher and Taher 1996). Of the four major Indian deltas on the eastern coast, the Godavari–Krishna delta of Andhra Pradesh is spread over an area of 585 sq. km with mangrove cover of 251 sq. km. It is the third largest mangrove in eastern India. The other important mangrove areas are Coringa, Kandikuppa, Nachgunta, Salagondi, Yanum, Antarvedi, Sarlagondi, Ellichitladibba, Repalle and Bandamuslanka (Banerjee 2002).

The Eastern Ghats are a rugged, hilly terrain running almost parallel to the eastern coast of India. The Eastern Ghats are divisible into three zones: the northern Eastern Ghats, the middle Eastern Ghats and the southern Eastern Ghats. Of these three zones, the northern and middle portions lie in Andhra Pradesh. The Eastern Ghats are

located between 11° 30'–22° 00' N and 76° 50'–86° 30' E in a N-E to S-W axis. The Ghats cover an area of about 75,000 sq. km with an average width of 200 km in the north and 100 km in the south. The elevation of the Eastern Ghats is from 750 m to 1,672 m. The Eastern Ghats run through Mallur in Warangal, Ukkumanidi in Khammam district, Maredumilli in East Godavari, Lankapakala in Visakhapatnam, Coringa in East Godavari, Peddacheruvu in Kurnool, Kuntlapalli in Anantapur and Talakona in Chittoor (Jadhav and Reddy 2002).

The climate is hot and humid with temperatures ranging from 15 °C to 45 °C. Precipitation is mainly during the southwest monsoon (June–September). Nearly 80% precipitation falls during this period, the rest during the northeast monsoon (November–December). The mean annual rainfall of the State ranges from 500 mm in the south to 1,210 mm in the north. The northeastern areas along the coastline are periodically lashed by cyclones.

Of the 16 existing IBAs of the erstwhile Andhra Pradesh, 12 are now in Seemandhra and the remaining three in the new Telangana State viz. Manjira Wildlife Sanctuary (IN-AP-05), Pakhal Lake Wildlife Sanctuary (IN-AP-08) and Pocharam Wildlife Sanctuary (IN-AP-09). The

IBA site codes	IBA site names	IBA criteria
IN-AP-01	Coringa Wildlife Sanctuary (AP)	A1, A4iii
IN-AP-02	Horsley Hills (AP)	A1, A2
IN-AP-03	Kaundinya Wildlife Sanctuary (AP)	A1, A2
IN-AP-04	Kolleru Wildlife Sanctuary (AP)	A1, A4i, A4iii
IN-AP-05	Manjira Wildlife Sanctuary (Telangana)	A1, A4i, A4iii
IN-AP-06	Nagarjunasagar-Srisailem Rajeev National Park (Tiger Reserve) (AP and Telangana)	A1
IN-AP-07	Nellapattu Wildlife Sanctuary (AP)	A1
IN-AP-08	Pakhal Lake Wildlife Sanctuary (Telangana)	A4iii
IN-AP-09	Pocharam Wildlife Sanctuary (Telangana)	A1, A3
IN-AP-10	Pulicat Lake Wildlife Sanctuary (AP)	A1, A4iii
IN-AP-11	Rollapadu Wildlife Sanctuary (AP)	A1, A4ii
IN-AP-12	Sri Lankamalleswara Wildlife Sanctuary (AP)	A1, A2
IN-AP-13	Sri Penusila Narasimha Wildlife Sanctuary (AP)	A1, A2
IN-AP-14	Sri Venkateswara National Park (AP)	A1, A2
IN-AP-15	Telineelapuram (AP)	A1
IN-AP-16	Uppalapadu (AP)	A1, A4i, A4iii
IN-AP-17	Noorukuppalakonda (AP)	A1, A2
IN-AP-18	Papikonda (AP)	A1, A3

Nagarjunasagar-Srisailem Tiger Reserve is spread across both the States including Nalgonda and Mahabubnagar districts in Telangana and Kurnool, and Prakasam and Guntur districts in Andhra Pradesh. Two new IBAs, Noorukuppalakonda (IN-AP-17) located in Chittoor district and Papikonda National Park (IN-AP-18) spread across East and West Godavari districts of Andhra Pradesh, have been added to the IBA list.

Vegetation

According to the Forest Survey of India (2013), the forest cover in the erstwhile Andhra Pradesh State is 24,375 sq. km constituting 15.21% of the geographical area. Five major forest types occur in Andhra Pradesh: Tropical Dry Deciduous, Tropical Thorn, Tropical Moist Deciduous, Tropical Dry Evergreen and Littoral and Swamp Forests. The forest area, a long strip, begins in the north from the Nizamabad district in the west to Srikakulam in the east. Besides this, a forest belt runs from the central to the southern part of the State in the Nallamalai Hills.

According to the Botanical Survey of India Report (1977), there are 17,000 species of flowering plants in India. Of these, 5,400 (32%) are found only in India while 2,000 are endemic to Peninsular India. Of these, 76 taxa are restricted specifically to the Eastern Ghats (Ahmedullah and Nayar 1987). Recently, Reddy and Raju (2001) enlisted 40 endemic taxa for the State of Andhra Pradesh and provided a detailed checklist of the endemic plants (360)

of peninsular India. Three endemic and threatened species are *Cycas beddomei* (Critically Endangered), *Pimpinella tirupatiensis* and *Boswellia ovalifoliota* (Endangered). It is estimated that nearly 1,800 medicinal plants are found in Andhra Pradesh (Rani and Pullaiah 2002).

IBAs AND THE PROTECTED AREAS

In 2004 (Islam and Rahmani 2004), 16 sites were identified as Important Bird Areas in the erstwhile State. Since then two more sites have been identified that fulfill the IBA criteria. They are Noorukuppalakonda and Papikonda.

AVIFAUNA

Andhra Pradesh has a long history of ornithological investigation, beginning with T.C. Jerdon in 1839–1840 when he worked on the birds of the Madras Presidency (now largely in Andhra Pradesh). After 30 years, Ball (1877) worked in Kondakarla and the surrounding areas of Vishakapatnam district. Abdulali (1945) surveyed the areas of Ananthagiri, Sankarmetta and Lamasinghi and collated a fairly comprehensive list of the ‘Birds of Vizagapatam’ with nearly 277 species. In 1953, Abdulali drew up an additional list. Several more studies were conducted by Trevor Price (1978, 1979, 1990), Krishna Raju and Justus (1971), Krishna Raju and Trevor Price (1973), Grubh (1976), Krishna Raju (1985), Hussian (1989, 1991), and Majumdar (1984).

Globally Threatened species in IBAs		
CRITICALLY ENDANGERED		
White-rumped Vulture	<i>Gyps bengalensis</i>	IN-AP-01, 04, 02, 06, 10, 14
Long-billed Vulture	<i>Gyps indicus</i>	IN-AP-01, 04, 06,09
Red-headed Vulture	<i>Aegypius calvus</i>	IN-AP-06
Great Indian Bustard	<i>Ardeotis nigriceps</i>	IN-AP-11
Jerdon's Courser	<i>Rhinoptilus bitorquatus</i>	IN-AP-12, 13
ENDANGERED		
Egyptian Vulture	<i>Neophron percnopterus</i>	IN-AP-02, 04, 06, 12, 13, 14, 17
Lesser Florican	<i>Sypheotides indica</i>	IN-AP-11
Black-bellied Tern	<i>Sterna acuticauda</i>	IN-AP-04, 06, 09, 10, 18
VULNERABLE		
Asian Woollyneck	<i>Ciconia episcopus</i>	IN-AP-06, 08, 09, 10, 18
Lesser Adjutant	<i>Leptoptilos javanicus</i>	IN-AP-04, 05, 16
Pale-capped Pigeon	<i>Columba punicea</i>	IN-AP-17
Greater Spotted Eagle	<i>Clanga clanga</i>	IN-AP-04, 05, 06, 10
Indian Skimmer	<i>Rynchops albicollis</i>	IN-AP-05, 09
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>	IN-AP-02, 03, 06, 13, 14, 18
Great Knot	<i>Calidris tenuirostris</i>	IN-AP-10
NEAR THREATENED		
Eurasian Thick-knee	<i>Esacus recurvirostris</i>	IN-AP-10, 14, 18
Eurasian Curlew	<i>Numenius arquata</i>	IN-AP-10
River Tern	<i>Sterna aurantia</i>	IN-AP-10, 18
Black-tailed Godwit	<i>Limosa limosa</i>	IN-AP-18
River Lapwing	<i>Vanellus duvaucelii</i>	IN-AP-18
Spot-billed Pelican	<i>Pelecanus philippensis</i>	IN-AP-01, 04, 07, 10, 15, 16
Oriental Darter	<i>Anhinga melanogaster</i>	IN-AP-05
Painted Stork	<i>Mycteria leucocephala</i>	IN-AP-01,05, 06, 15
Black-headed Ibis	<i>Threskiornis melanocephala</i>	IN-AP-01,05, 16
Ferruginous Duck	<i>Aythya nyroca</i>	IN-AP-01
Grey-headed Fish-eagle	<i>Ichthyophaga ichthyaeus</i>	IN-AP-06
Pallid Harrier	<i>Circus macrourus</i>	IN-AP-06
SECONDARY AREA S071: EASTERN ANDHRA PRADESH		
Jerdon's Courser	<i>Rhinoptilus bitorquatus</i>	IN-AP-12, 13
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU		
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>	IN-AP-02, 03, 13, 14

The BNHS undertook detailed studies on the Great Indian Bustard *Ardeotis nigriceps* in Rollapadu (Rahmani 1989). The Lesser Florican *Sypheotides indica* was also the subject of focus at Rollapadu (Sankaran and Manakadan 1990). The re-discovery of the Jerdon's Courser *Rhinoptilus (=Cursorius) bitorquatus* near Reddipalli village in Cuddapah district in 1986 (Bhushan 1986) led to the notification of the Sri Lankamalleswara Sanctuary in Cuddapah district. During recent years, BNHS also made detailed studies of the threatened Spot-billed Pelican *Pelecanus philippensis* in Pulicat Lake and Nelapattu of Nellore district (Manakadan and Kannan 2003) and the Critically Endangered Jerdon's Courser (Jeganathan *et al.* 2002, Jeganathan *et al.* 2004) in

Sri Lankamalleswara Wildlife Sanctuary. Andhra Pradesh has a large number of heronries, perhaps as many as 60, of which 41 are active. The Telikunchi heronry in Srikakulam district is the largest in India (Subramanya 1996a), and as many as 25,000 Asian Openbill *Anastomus oscitans* breed here (Subramanya 1996b).

The Birdwatcher's Society of Andhra Pradesh and its members have made a considerable contribution to the ornithology of Andhra Pradesh through various field trips, especially in and around Hyderabad and also in the surrounding districts of Medak, Ranga Reddy, Warangal, Nizamabad, Nalgonda and Mahboobnagar. Checklist of birds of Andhra Pradesh was prepared in 1989 (Taher and



M SHAFIAT ULLAH

Like all wetlands, Kolleru Lake is under tremendous biotic pressures. With proper conservation measures in collaboration with the local people, this Ramsar Site can become a source of sustainable livelihood to local traditional fishermen and farmers, and also an important site for waterbirds

Pittie 1989) which has been updated regularly (Taher and Pittie 1996).

Species for which Andhra Pradesh is very important

**Jerdon's Courser *Rhinoptilus bitorquatus*
Critically Endangered**

This bird is endemic to Andhra Pradesh and is known from the Godavari river valley near Sironcha and Bhadrachalam and from the Cuddapah and Anantapur areas in the valley of the Pennar River (Ali and Ripley 1987). Two main sites - Sri Lankamaleshwara Wildlife Sanctuary and Sri Penusila Narasimha Wildlife Sanctuary - have been identified for the protection of this bird. During the last ten 15 years, BNHS with the help of RSPB, Darwin Initiative and Andhra Pradesh Forest Department has been carrying out detailed surveys and research. Unfortunately, the bird has not been seen since the last five years.

**Great Indian Bustard *Ardeotis nigriceps*
Critically Endangered**

In the 1980s, the bustard was found in 3-4 areas, and up to 60 birds were seen in Rollapadu grasslands (Rahmani and Manakadan 1990) but due to poaching and mismanagement

of the grasslands, the bustard population has come down. Now less than five birds are left in Rollapadu. No territorial male has been seen since the last three years. The major conservation issue of this IBA is the disappearance of the Great Indian Bustard due to lack of attention towards its habitat requirements, which is open grassland.

**Yellow-throated Bulbul *Pycnonotus xantholaemus*
Vulnerable**

While major population of this south Indian endemic is found in Karnataka, in Andhra Pradesh it is reported from six sites, with two (Horsley Hills and Noorukuppalakonda) having significant numbers.

**Spot-billed Pelican *Pelecanus philippensis*
Near Threatened**

Previously listed as Vulnerable, this species has now been downlisted to Near Threatened. While it may be moderately declining in other countries of its range (BirdLife International 2014), in Andhra Pradesh it has shown a remarkable recovery and now many nesting colonies are well protected by local communities (Rahmani 2012). In the past, this pelican nested on the banks of the Godavari river and some of the wetlands of the delta are still important for this



DHIRITIMAN MUKHERJEE

PRAMOD PATIL

With massive decline in the number of Great Indian Bustard *Ardeotis nigriceps*, soon it will remain only in images and dioramas (inset)

Pelican, especially from Coringa Wildlife Sanctuary, Kolleru lake (Guttikar 1979) and Kolleru pelicanry (sometimes called Aredu-Sarapalle or Kolamaru) (Perennou and Santharam 1990), Uppalapadu (Rao and Kumar 2000), Nelapattu tank and Pulicat lake (Perennou and Santharam 1990).

THREATS AND CONSERVATION ISSUES

Andhra Pradesh has usual types of threats and conservation issues such as unsustainable exploitation, over-grazing, illegal forest cutting, expansion of agriculture in forest areas, mining and building of dams/canals resulting in the fragmentation of natural habitats. Out of the 18 IBAs, 10-12 IBAs face threat from industrialisation and urbanisation. Disturbance to birds in the form of poaching, trapping, overgrazing and fire during breeding period is seen in nine IBAs. Agriculture expansion and intensification are seen in eight IBAs as the main threat, along with other threats. Unsustainable exploitation in the form of illegal grazing, cutting of trees, mining in the core areas and fishing in wetlands are the major threats in five IBAs. Firewood collection, rampant in most of the forests of Andhra Pradesh, is widespread in four IBAs.

Most of the protected areas suffer from overgrazing by livestock, illegal tree cutting, legal as well as illegal removal of minor forest products and mining. One of the most important protected areas of the State is Srisailem Tiger Reserve (an IBA). Even this sprawling Reserve of 3,568 sq.

km is under threat due to a plan to extract uranium just at the border. The proposed uranium mining site is located near Lambapur village. The ore deposits are spread over 468 acres over a hill-top. This site will be mined by conventional open cast method, aggravating pollution problem. Nagarjuana Sagar reservoir lies to the southeast of the mining site, less than 2 km away. The mine company requires 1,104 acres of land close to the Reserve. Needless to say, if open cast mining is allowed here, the Reserve will be negatively impacted due to biotic pressures and water pollution.

The Rollapadu Wildlife Sanctuary (Manakadan and Rahmani 1989), an IBA and at one time one of the most important Great Indian Bustard areas in south India, has suffered from mismanagement of the habitat (Manakadan *et al.* 2002) and increase in the number of Blackbuck *Antelope cervicapra* that destroy agricultural crops resulting in huge resentment amongst villagers. Now only three bustards, all females, are sometimes seen in the area.

The Telugu Ganga canal was a major threat to the Jerdon's Courser habitat in Sri Lankamalleswara Wildlife Sanctuary but its route was finally diverted away from the bird's habitat. This has added other problems such as increase in the ground water level in some places, and resultant change in the scrub jungle habitat (Jeganathan 2008). Cattle are also now prevented to graze in some areas, resulting in thick vegetation that is not suitable to the Jerdon's Courser. No Jerdon's Courser has been sighted during last five years,



ISHAN AGARWAL

Golden Gecko *Calodactylodes aureus* was rediscovered in Sri Venkateswara Wildlife Sanctuary in 1985. Since then, it has been found in many places

despite very intensive camera trapping studies, and regular field studies by BNHS scientists and Forest officials.

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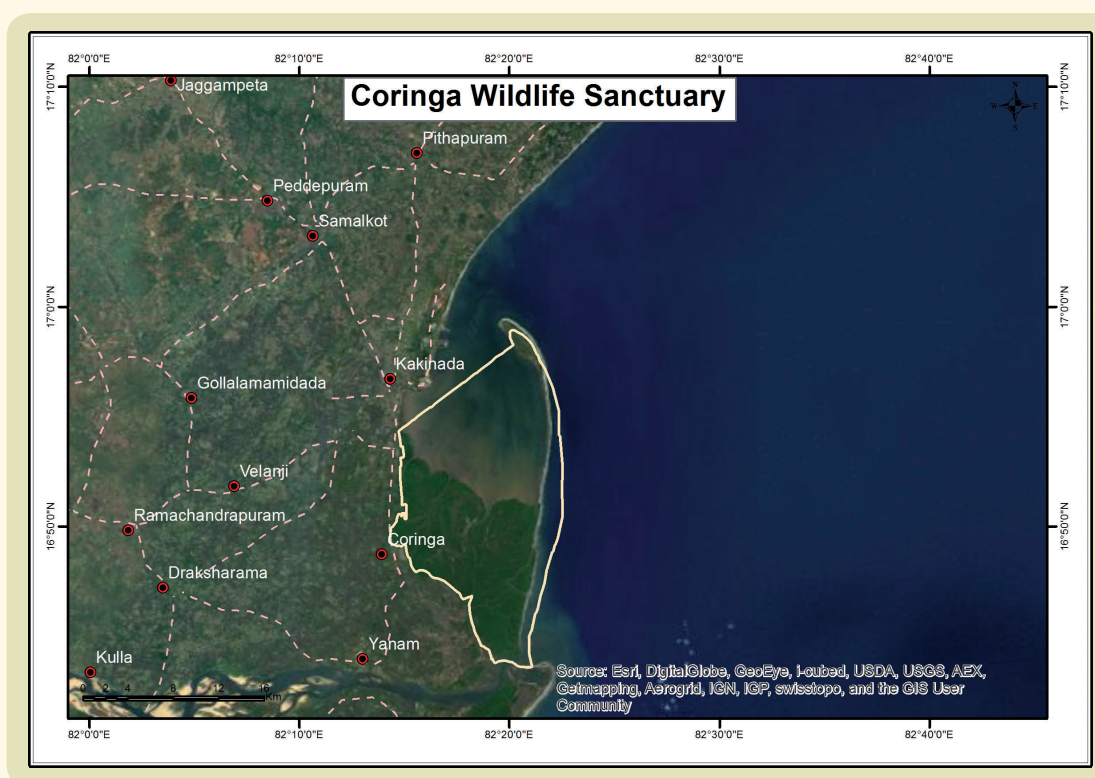
CORINGA WILDLIFE SANCTUARY AND GODAVARI ESTUARY

IN-AP-01

IBA Site Code	: IN-AP-01	Altitude	: 0 msl
Administrative Region (State)	: Andhra Pradesh	Rainfall	: >1,000 mm
District	: East Godavari	Temperature	: 17 °C to 40 °C
Coordinates	: 16° 49' 53" N, 82° 20' 12" E	Biogeographic Zone	: Coast
Ownership	: State	Habitats	: Mangroves, Dry Deciduous Tropical Forest
Area	: 23,570 ha (Coringa WLS)		

IBA CRITERIA : A1 (Threatened species), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Wildlife Sanctuary, established July, 1978.



GENERAL DESCRIPTION

Coringa Wildlife Sanctuary is located 20 km south of the port city Kakinada, on the Kakinada-Yanam state highway, nestling on the deltaic branches of Gouthami and Godavari rivers at Kakinada Bay. It has extensive marshes and mangroves. During monsoon, the mudflats get submerged under 5 m water. These large mudflats, which are subjected to cyclic influx and efflux of tidal water, play a vital role in attracting a large number of waders to this region. About 50% of the area is the backwaters which include a 20 km sand bar running north-south (Rao *et al.* 1996). Two rivers, namely the Coringa and Gaderu, and their deltaic streams intersect the entire region, along with other water channels draining into them or directly into the sea. This forms c. 33,570 ha of marsh vegetation. After Sundarbans in West Bengal, Coringa is the second largest mangrove tract in India.

The sanctuary is part of the estuary of River Godavari, and supports a rich growth of mangrove vegetation with halophytes such as *Excoecaria agallocha*, *Rhizophora mucronata*, *Avicennia officinalis*, *Lumnitzera racemosa*, *Ceriops decandra*, *Sonneratia apetala*, and *Aegiceros corniculatum*. According to Raja Sekhar *et al.* (2002), 24 species are representative of the vegetation structure of Godavari estuary.

Islam & Rahmani (2008) proposed Coringa Wildlife Sanctuary and Coringa Estuary as a Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse conditions to threatened species), and Criteria 5 (wetland regularly supports ≥20,000 waterbirds). Prasad *et al.* (2004) recommended Godavari river as a Ramsar site. According to the Ramsar Wetland Types,



Coringa Wildlife Sanctuary has one of the largest intact mangroves on the east coast of India

Coringa is Type G (intertidal mud and salt flats) and Type I (intertidal mangrove swamps).

AVIFAUNA

Rao *et al.* (1996) identified 236 species of birds from this sanctuary. However, they included species that are not likely to be present, such as Yellow-throated Bulbul *Pycnonotus xantholaemus*, Wood Snipe *Gallinago nemoricola*, and Sociable Lapwing *Vanellus gregarius*. Nevertheless, Coringa is an extremely interesting area for waders and mangrove birds, and should be designated as an IBA (Aasheesh Pittie, *pers. comm.* 2001). More than 20,000 waders use this area in a year. The area needs detailed investigation on its birdlife.

White-rumped Vulture *Gyps bengalensis* and Long-billed Vulture *Gyps indicus* (both considered Critically

Endangered due to the sharp decline in their population: BirdLife International 2001) are found here. Among the Near Threatened species, Painted Stork *Mycteria leucocephala*, Black-headed Ibis *Threskiornis melanocephala*, and Ferruginous Duck *Aythya nyroca* are found in Coringa.

Rao *et al.* (1996) reported 17 species of ducks, and 37 species of waders of family Charadriidae. Even though some species need to be confirmed, the site still holds a very high diversity of waterbirds. During Mid-winter Waterbird Census in Andhra Pradesh, Pittie & Taher (2004) identified 57 species of waterbirds and raptors from 1987 to 1996.

OTHER KEY FAUNA

A fair population of Fishing Cat *Prionailurus viverrinus*, Golden Jackal *Canis aureus*, sea turtles and Estuarine Crocodile *Crocodylus porosus* are present in Coringa. This IBA has a large breeding population of otters. In fact, the entire estuarine mangrove forest of Godavari river is a stronghold of otters, mainly Smooth Indian Otter *Lutra perspicillata* (Nagulu *et al.* 1991, 1999). The sighting of otters in this IBA is very common, and the group size ranges from two to 12, indicating healthy breeding populations (S.A. Hussain, *in litt.* 2003).

Due to the efforts of the East Godavari Riverine Estuarine Ecosystem (EGREE) Foundation, a joint initiative of the Government of India and United Nations Development Project, the villagers living in areas abutting the Coringa mangroves have now stopped killing Fishing Cat that sometimes intrude into the residential areas in search of food.

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
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NEAR THREATENED

Spot-billed Pelican	<i>Pelecanus philippensis</i>
Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Lesser Flamingo	<i>Phoeniconaias minor</i>

The records of the Andhra Pradesh Forest Census indicate that there is a sharp decline of 76 per cent in the population of Fishing Cat in the Godavari region in the last 10 years.

LAND USE

- Nature conservation and research
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Deforestation
- Unrestricted, growing tourism
- Habitat destruction
- Poaching
- Unsustainable exploitation of forest resources
- Livestock grazing
- Fuel wood collection

Despite their remoteness and difficulties in accessibility, the mangroves of Coringa are heavily exploited by the local people. In a socio-economic study, Collin *et al.* (2002) found that 95% of the fishermen of Ramananpalem village harvest wood in the mangroves and transport it by boat, usually while returning from fishing. Among the seven mangrove species collected for fuel wood, *Avicennia marina* and *A. officinalis* are preferred. The survey confirmed the villagers' high dependency on the mangrove forest for their basic needs.

Increased poaching and habitat destruction has imperilled the existence of otters in the Coringa Wildlife Sanctuary. The Forest Department is reported to have initiated steps for the conservation of otters and for the afforestation of mangroves in the sanctuary. With the increasing industrialization of the entire Godavari delta, and increasing aquaculture activities and fishing pressure, the survival of this isolated population of otters in Coringa is at stake (Hussain 1999).

In 2013, the Department of Tourism, Government of India wanted to develop cottages very close to the sanctuary, which was opposed by conservationists on environmental grounds, particularly by the Society for the Promotion of Coastal Areas Management (SPICAM) and M.S. Swaminathan Foundation.

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S.A. Hussain, Aasheesh Pittie.

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Links

- <http://m.thehindu.com/news/national/andhra-pradesh/koringa-a-safe-haven-for-the-fishing-cat/article5925973.ece/?maneref=http%3A%2F%2Fmobile.newsnw.co.uk%2FA%2F708241465%3F-2808>
- <http://www.thehindu.com/news/national/andhra-pradesh/coringa-cottage-plan-triggers-protest/article4700112.ece>

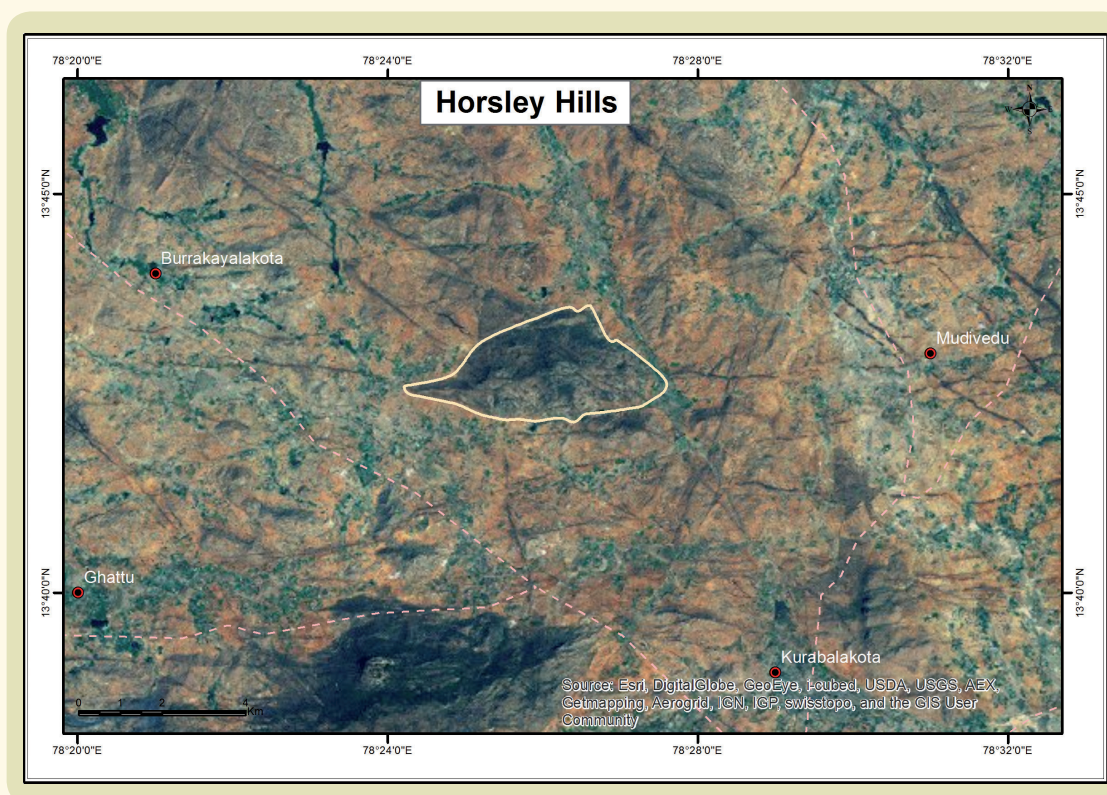
HORSLEY HILLS

IN-AP-02

IBA Site Code	: IN-AP-02	Area	: 4,700 ha
Administrative Region (State)	: Andhra Pradesh	Altitude	: 1,347 msl
District	: Chittoor	Rainfall	: Not available
Coordinates	: 13° 40' 60" N, 78° 28' 00" E	Temperature	: 20 °C to 32 °C
Ownership	: State	Biogeographic Zone	: Deccan Peninsula
		Habitats	: Tropical Dry Deciduous Forest

IBA CRITERIA : A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau)

PROTECTION STATUS : Not officially protected.



GENERAL DESCRIPTION

Horsley Hills in Chittoor district are part of the Eastern Ghats. The hills were named after M.W.H. Horsley, a member of the British Indian Civil Service (Subramanya & Prasad 1996). The Hills lie within the Horsley Konda Reserve Forest in an area of 4,700 ha, with a total of 13 peaks, of which seven are above 1,000 m, the highest being 1,347 m (Subramanya & Prasad 1992). Prior to 1850, when Horsley took a fancy to this place, the hills were known as Enugu Mallamma Konda. The ruins of an old fort indicate that the hills had great local importance. Recently, stone age tools were unearthed, giving these hills archaeological importance as well. The Chenchu tribe, who inhabit Horsley Hills, keep Pungannur cows, known for their high milk yield

and low fodder requirement. Horsley Hills is 143 km from Tirupati and 140 km from Bengaluru.

Horsley Hills are popular among local tourists who go to see their natural beauty and to escape from the heat of the plains. The Mallamma temple is another major tourist and pilgrim centre.

The habitat is predominantly Dry Deciduous, with a small patch of Moist Deciduous Forest. The habitat structure has changed completely due to extensive plantations of *Eucalyptus*. Wild vegetation, wherever present, is highly disturbed. This site is well known to Indian ornithology, as Jerdon (1863) possibly obtained type specimens of the globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus* from Horsley (Whistler & Kinnear 1932).

The natural vegetation of the hills is represented by trees such as *Diospyros melanoxylon*, *Emblica officinalis*, *Albizia amara*, *Ficus religiosa*, *F. tomentosa*, *F. bengalensis*, and *Santalum album*. Unfortunately, the natural vegetation has been replaced by plantations of *Eucalyptus*, *Jacaranda*, *Allamanda*, and *Delonix*, especially at lower elevations.

AVIFAUNA

Subramanya & Prasad (1996) have conducted studies in Horsley Hills on the Yellow-throated Bulbul. Four species of bulbuls were found by them: Red-vented *Pycnonotus cafer*, Red-whiskered *P. jocosus*, White-browed *P. luteolus*, and Yellow-throated *P. xantholaemus*. Among the total of 158 bulbuls sighted, the Yellow-throated was the most abundant, while the Red-vented, otherwise very common, was the least abundant (Subramanya & Prasad 1996). The Yellow-throated Bulbul was mainly seen in densely vegetated, boulder-strewn hilly areas, frequently in flocks of up to six birds. Since the collection of type specimens nearly 150 years ago, Horsley Hills could still be considered as the stronghold of this globally Threatened bulbul; therefore, it was selected as an IBA.

Besides the Yellow-throated Bulbul, Horsley Hills has 28 Biome 11 species (Indo-Malayan Tropical Dry Zone). BirdLife International (undated) has reported a total of 59 species from Biome 11. This biome includes a wide range of habitats, including forests and open country. Many of the species listed have adapted to man-modified habitats, so they are widespread and common. Many species have changed their distribution due to habitat modification over hundreds of

CRITICALLY ENDANGERED	
White-rumped Vulture	<i>Gyps bengalensis</i>
ENDANGERED	
Egyptian Vulture	<i>Neophron percnopterus</i>
VULNERABLE	
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>

years. Interestingly, Indian Scimitar-babbler *Pomatorhinus horsfieldii*, restricted to the hills of peninsular India, is also found here. Similarly, Loten’s Sunbird *Nectarinia lotenia*, resident of well-wooded country of central and south India (Ali & Ripley 1987, Grimmett *et al.* 1999) is also reported from this IBA. Both species belong to Biome 10 (Indian Peninsula Tropical Moist Forest) according to BirdLife International (undated).

Some more Biome10 species are recorded from the hills. The Critically Endangered White-rumped Vulture *Gyps bengalensis* is regularly sighted here.

Subramanya & Prasad (1992) sighted 83 species, including the Forest Wagtail *Motacilla indica*, possibly the third record from Andhra Pradesh, and the Blue-headed Rock Thrush *Monticola cinclorhynchus*, which is uncommon in the Eastern Ghats. The thrush winters mainly in the Western Ghats and Assam hills (Ali & Ripley 1987, Grimmett *et al.* 1999). They also saw a pair of Black Eagle *Ictinaetus malayensis*. Prasanna *et al.* (1997) added nine species, including Scavenger (Egyptian) Vulture *Neophron percnopterus*, which is now considered Endangered.

IN-AP-02



SAMAD KOTTUR

Among the four species of bulbuls, the Yellow-throated Bulbul *Pycnonotus xantholaemus* was found to be the most abundant in Horsley Hills



ASAD R. RAHMANI

Horsley Hills in Andhra Pradesh is one of the most important sites of the Yellow-throated Bulbul *Pycnonotus xantholaemus* where one can see this species very easily. The Yellow-throated Bulbul prefers boulder-strewn low hills as seen above

OTHER KEY FAUNA

Important fauna includes the Sloth Bear *Melursus ursinus*, Wild Dog *Cuon alpinus*, Sambar *Rusa unicolor*, and Leopard *Panthera pardus*. Beddome's Coral Snake *Calliophis beddomei*, whose population is restricted to four known locations (Anon. 2001), is found here.

LAND USE

- Plantations
- Tourism and recreation

THREATS AND CONSERVATION ISSUES

- Fuel wood collection
- Grazing
- Unregulated tourism and ancillary activities

Horsley Hills are an important hill station in Andhra Pradesh. The pleasant weather attracts tourists throughout the year. Extensive plantation of exotic species was intended to increase greenery, but it has destroyed the natural vegetation of the hills.

Subramanya & Prasad (1992) did not find Jungle Crow *Corvus macrorhynchos* on the hills, but now due to increase of tourists and the resultant garbage, the crow population is increasing (Prasanna *et al.* 1997). This is likely to put additional biotic pressure on the Yellow-throated Bulbul and similar birds.

Due to increase in tourism, developmental activities such as construction of hotels and lodges are taking place. Therefore, it is of major concern to check further destruction

of the forest, particularly as the hill forest is an important site for the restricted-range Yellow-throated Bulbul.

The Chittoor district administration is very keen to develop greater tourist facilities as Horsley is the only hill station in Andhra Pradesh.

KEY CONTRIBUTOR

S. Subramanya

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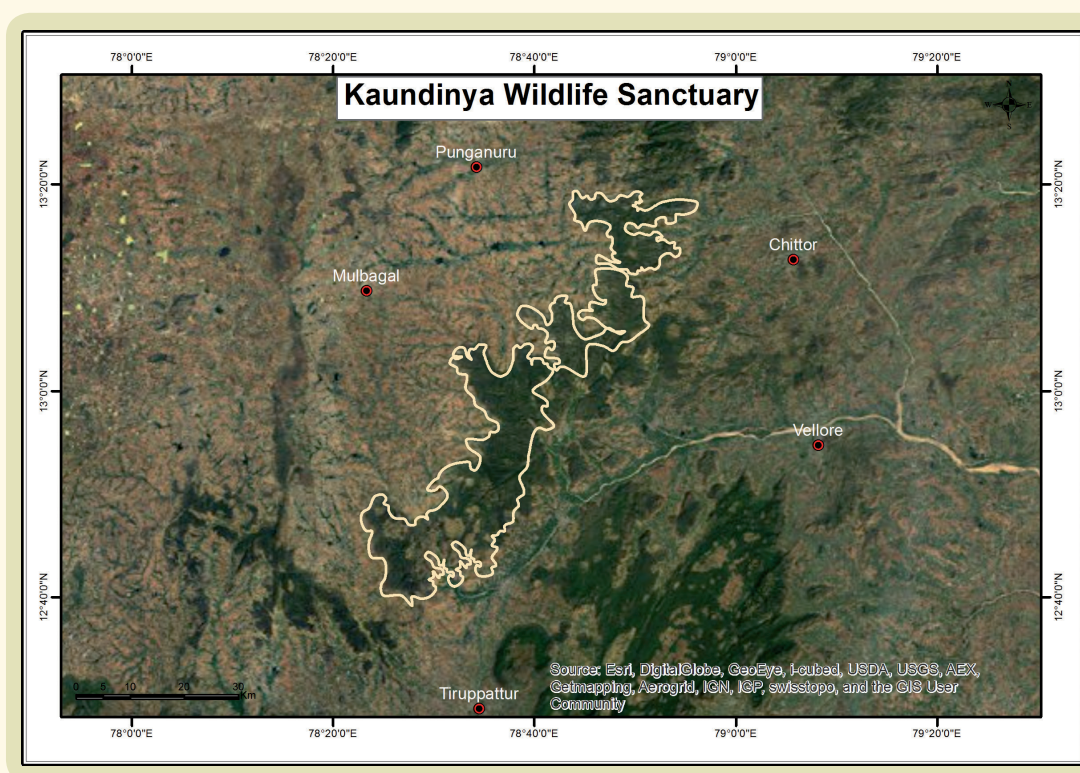
KAUNDINYA WILDLIFE SANCTUARY

IN-AP-03

IBA Site Code	: IN-AP-03	Altitude	: 650 msl
Administrative region (State)	: Andhra Pradesh	Rainfall	: 438 mm (southwest monsoon) + 396 mm (northeast monsoon)
District	: Chittoor	Temperature	: 15 °C to 45 °C
Coordinates	: 13° 01' 30" N, 78° 38' 42" E	Biogeographic Zone	: Deccan Peninsula
Ownership	: State	Habitats	: Tropical Dry Deciduous Forest, Tropical Secondary Scrub
Area	: 35,760 ha		

IBA CRITERIA : A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan Plateau). Data Deficient.

PROTECTION STATUS : Wildlife Sanctuary, established December, 1990.



GENERAL DESCRIPTION

Kaundinya Wildlife Sanctuary covers an area of 35,760 ha in Kuppam and Palamaner Ranges of Chittoor district, Andhra Pradesh. It is the only sanctuary in Andhra Pradesh that harbours a population of elephants, which reportedly reappeared in 1984 after 200 years (Prasad & Reddy 2002). The sanctuary has Dry Deciduous Forest, with thorny scrub interspersed with trees providing a good habitat for elephants. These forests have small ponds, tanks, and the Kaundinya and Kaigal tributaries of Palar river, which provide the main sources of water for animals. The sanctuary is situated 50 km from Chittoor and 120 km from Bengaluru.

According to Champion & Seth (1968), the forest of Kaundinya is classified as Southern Tropical Dry Mixed Deciduous, which predominantly comprises trees such as *Hardwickia binata*, *Chloroxylon swietenia*, *Albizia amara*, *Boswellia serrata*, *Anogeissus latifolia*, *Pterocarpus santalinus*, *Shorea* spp., and *Ficus* spp. The watercourses are dominated by species such as *Terminalia arjuna*, *Millettia pinnata*, *Tamarindus indica*, *Mangifera indica*, and *Syzygium cumini* (Daniel *et al.* 2006). According to Meher-Homji (1990), the vegetation can be classified under the biogeographical zone of *Hardwickia binata* and *Albizia amara*, particularly in the southern part of the sanctuary. The exotic *Lantana camara* has invaded vast areas of the sanctuary.



Kaundinya Wildlife Sanctuary, famous for a small population of elephants, is also an important habitat of the endemic Yellow-throated Bulbul *Pycnonotus xantholaemus*

VULNERABLE

Yellow-throated Bulbul *Pycnonotus xantholaemus*

SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU

Yellow-throated Bulbul *Pycnonotus xantholaemus*

AVIFAUNA

No detailed study on avifauna has been conducted at this site, but the Yellow-throated Bulbul *Pycnonotus xantholaemus* is found here. We consider it as a Data Deficient site.

OTHER KEY FAUNA

Since the reappearance of seven elephants in Kaundinya in 1984 and then of 22 in 1986, the population has increased to 78 (Prasad & Reddy 2002). Besides the elephant, major wildlife includes Sloth Bear *Melursus ursinus*, Leopard *Panthera pardus*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Crested Porcupine *Hystrix indica*, Wild Boar *Sus scrofa*, Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, and Slender Loris *Loris lydekkerianus*. According to Daniel *et al.* (2006), Four-horned Antelope *Tetracerus quadricornis*, Mouse Deer *Moschiola indica* (= *Tragulus meminna*), Dhole or Wild Dog *Cuon alpinus*, Golden Jackal *Canis aureus*, Striped Hyaena *Hyaena hyaena*, Slender Loris *Loris lydekkerianus* (= *tardigradus*), Bonnet Macaque *Macaca radiata*, and Grey Langur *Semnopithecus entellus* are found.

LAND USE

- Nature conservation

THREATS AND CONSERVATION ISSUES

- Man-animal conflict
- Overgrazing
- Illegal wood collection

Kaundinya WLS is the only reserve in the state where Asiatic Elephant returned after 200 years. Since the elephants reappeared, the sanctuary has become the focus of conservation action. Seven villages are situated inside the sanctuary. Insufficient fodder in the forest due to severe overgrazing by livestock, and the availability of crops such as sugarcane, sorghum, and millets attract elephants, resulting in man-animal conflict. Sadly, till 2002, 42 people have been killed by elephants (Prasad & Reddy 2002). At the same

time, 12 elephants were electrocuted to death by angry villagers.

A corridor for elephants is planned between Kaundinya and Sri Venkateswara National Park (also an IBA) under Project Elephant (Prasad & Reddy 2002). There is good elephant habitat at Kalyani Dam in Chamala Valley near Tirupati. Chamala Valley is a part of Sri Venkateswara National Park.

With better habitat protection under Project Elephant, the Yellow-throated Bulbul would also benefit, along with other dry land bird species.

KEY CONTRIBUTORS

Workshop participants and IBA Team, Ranjit Manakadan.

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KOLLERU LAKE WILDLIFE SANCTUARY

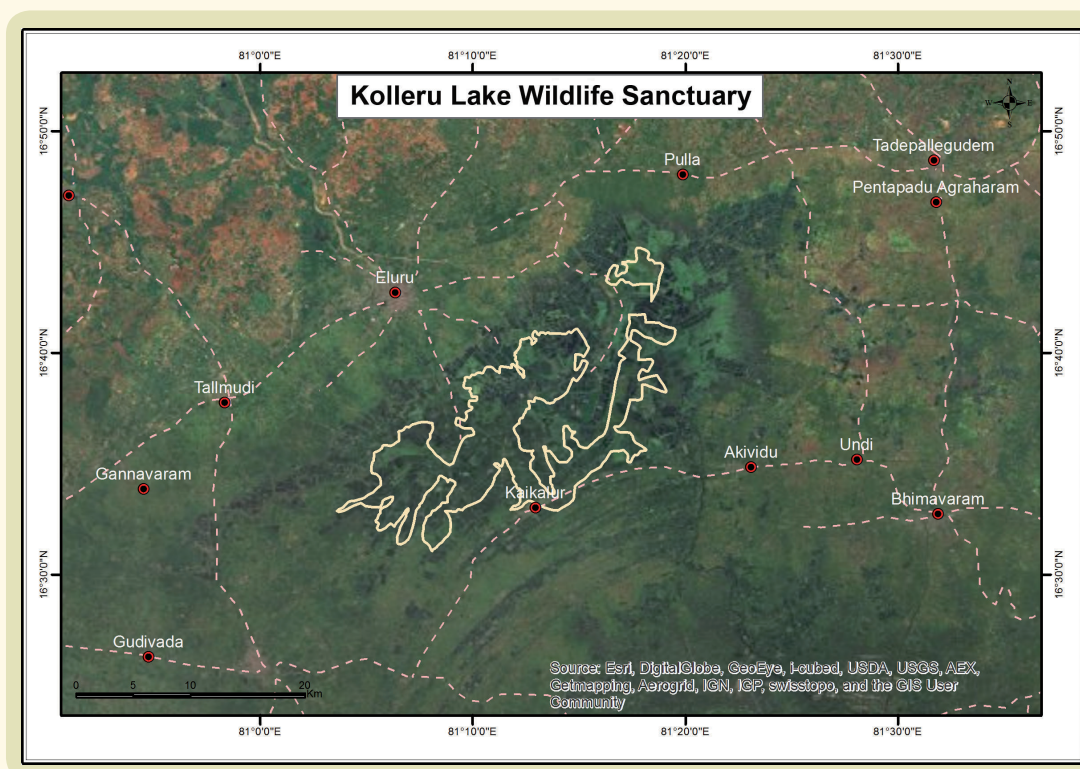
IN-AP-04

IBA Site Code	: IN-AP-04
Administrative region (State)	: Andhra Pradesh
District	: West Godavari, Krishna
Coordinates	: 16° 47' 32" N, 81° 23' 25" E
Ownership	: State
Area	: 67,300 ha

Altitude	: 0–5 msl
Rainfall	: 1,000 mm
Temperature	: 21 °C to 32 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Freshwater Lake, Tropical Secondary Scrub

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Wildlife Sanctuary, established September, 1963.



GENERAL DESCRIPTION

Kolleru is a large, natural, shallow, freshwater lake with associated marshes, situated between the Krishna and Godavari rivers, c. 55 km east of Vijayawada and c. 25 km northwest of the coastline. The surface area of the lake is determined by the volume of monsoon run-off and is subject to wide fluctuation as water levels rise and fall. At maximum flooding of 3 m, the area of the lake is over 90,000 ha. At 1 m, it may fall to 13,000 ha. The lake drains into the Bay of Bengal through the Upputeru river. Occasionally, small amounts of salt water enter the otherwise freshwater lake through this river. The surrounding areas are mostly under agriculture.

Kolleru was declared a Ramsar Site in November, 2002. It regularly supports more than 50,000 waterfowl,

due to which it was selected as an IBA. It qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse conditions to threatened species), Criteria 5 (wetland regularly supports ≥20,000 waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies). According to the Ramsar Wetland Type, Kolleru is Types O (permanent freshwater lake). The Ministry of Environment and Forests, Government of India has identified Kolleru as a wetland of special importance under the Wetland Conservation Programme.

The vegetation is luxuriant and about 34 species of aquatic and semi-aquatic species are recorded (Seshavataram *et al.* 1982, quoted in Rao & Rao 1987; Azeez *et al.* 2011). Almost

all the surface is covered with emergents and floating aquatic plants such as *Ipomoea aquatica*, *Ottelia alismoides*, *Nymphoides indicum*, *Limnophila indica*, *Utricularia* sp., *Potamogeton crispus*, *Nechamandra alternifolia*, *Chara* sp., and *Nitella* sp. The surrounding areas are under intensive cultivation. Cultivated Coconut trees are abundant in this area.

AVIFAUNA

Rao *et al.* (2014) recorded 232 species of birds belonging to 62 families from this site.

At one time, it was famous for a breeding colony of Spot-billed or Grey Pelican *Pelecanus philippensis*. Gordon Mackenzie, Collector of Krishna district, in his manual dated April 16, 1883, mentioned colonies of Pelican in Kolleru and the protection given to them by villagers who considered them harbingers of good fortune. Neelakantan (1949) and Gee (1960) described the Aredu-Sarepalle pelicanry. Aredu village near Kolleru had the largest known breeding population of Spot-billed Pelican in India, thanks to the protection provided by villagers (Krishnan 1981), but unfortunately this pelicanry disappeared in the 1970s due to unknown reasons. In the early 1960s, there were 1,500 nests. In 1968, less than 400 remained and by 1974, the colony had disappeared (Anon. 1991). A survey of avian fauna by Osmania University Professor Ramana Rao and his team in the late 1970s did not mention pelicans in the list of 188 local and migratory birds sighted in Kolleru. For almost 20 years, this bird was not seen in Kolleru Lake but now the Spot-billed Pelican is found here occasionally. Kannan & Manakadan (2005) reported 25 Spot-billed Pelican in November, 2004 and 33 in January, 2004. They were seen again in November, 2006, a few months after the demolition of the fish tanks (Operation Kolleru, February to June 2006, Azeez *et al.* 2011) that spread all over the lake. During the operation 1,776 fish culture tanks occupying 42% of the lake area were demolished.

However, Kolleru still attracts thousands of waterfowl. During the mid-winter waterfowl count of 1988, more than 17,000 birds were reported from around 30% of the lake area (Scott 1989). The following year, 25,000 waterfowl were recorded, but this was probably due to better counting methodology (Anon. 1991). The most abundant, however, are the Garganey *Querquedula querquedula*. Up to 10,000 were counted (Scott 1989). According to Wetlands International (2012), 1% biogeographic population threshold for this species is 3,500, so about 3% of the total non-breeding Garganeys of South Asia winter in this site. Similarly, about 1,000 Asian Openbill *Anastomus oscitans* were counted. According to Wetlands International (2012), there could be over 300,000 Asian Openbill in South Asia.

Other common birds are the Lesser Whistling Teal *Dendrocygna javanica*, Northern Pintail *Anas acuta*, Wigeon

A. penelope, Common Teal *A. crecca*, Northern Shoveller *Spatula clypeata*, Red-crested Pochard *Netta rufina*, Purple Moorhen *Porphyrio porphyrio*, Indian Pond-heron *Ardeola grayii*, Grey Heron *Ardea cinerea*, Eurasian Coot *Fulica atra*, Little Grebe or Dabchick *Tachybaptus ruficollis*, Glossy Ibis *Plegadis falcinellus*, Yellow Bittern *Ixobrychus sinensis*, Chestnut or Cinnamon Bittern *I. cinnamomeus*, Black Bittern *Dupetor flavicollis*, White-breasted Waterhen *Amaurornis phoenicurus*, Black-winged Stilt *Himantopus himantopus*, and Blue-breasted or Slaty-breasted Rail *Gallirallus striatus*.

In 2013, Greylag Goose *Anser anser*, which has not been sighted in the Deccan and south India so far, was documented in Kolleru Wildlife Sanctuary for the first time by an expert of the Birdwatchers Society of Andhra Pradesh. However, the bird was first sighted in Kolleru by members of Bombay Natural History Society, P. Balachandar and Premjit, in the winter of 2011, though no photograph could be taken. In January, 2013 it was photographed by Premjit, feeding in Chinthakoduru drain near Pothunuru village.

There is a report of the Critically Endangered Spoon-billed Sandpiper *Eurynorhynchus pygmeus* in 2009 during the Asian Waterfowl Census (AWC) but unless a good photograph is produced, this sighting should be considered unconfirmed at this IBA. The Asian Waterbird Census (2009–2014) reveals that Near Threatened species such as Spot-billed Pelican *Pelecanus philippensis*, Painted Stork *Mycteria leucocephala*, and Black-tailed Godwit *Limosa limosa* are found in good numbers. As many as 4,500 Spot-billed Pelican, 1,700 Painted Stork, and more than 20,000 Black-tailed Godwit were observed in 2014. Apart from

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>

ENDANGERED

Egyptian Vulture	<i>Neophron percnopterus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
Indian Spotted Eagle	<i>Clanga hastata</i>

NEAR THREATENED

Ferruginous Duck	<i>Aythya nyroca</i>
Spot-billed Pelican	<i>Pelecanus philippensis</i>
Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Eurasian Curlew	<i>Numenius arquata</i>
Black-tailed Godwit	<i>Limosa limosa</i>
Pallid Harrier	<i>Circus macrourus</i>
Red-headed Falcon	<i>Falco chicquera</i>
River Tern	<i>Sterna aurantia</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>

the threatened species, birds of Biome 11 (Indo-Malayan Tropical Dry Zone) such as Red-naped Ibis *Pseudibis papillosa* and Yellow-wattled Lapwing *Vanellus malabaricus* are also seen here.

OTHER KEY FAUNA

The lake supports rich fish fauna, including some endemic subspecies. Sixty-three species of fish belonging to 29 families have been recorded in commercial catches (Dutt 1983, quoted in Rao & Rao 1987). However, due to poor management and over-exploitation, the fish catch is going down. For instance, in 1974, nearly 7,000 tonnes was caught, but the catch decreased to 3,000 tonnes in 1985 (Anon. 1991).

LAND USE

- Fishing and aquaculture ponds
- Agriculture

THREATS AND CONSERVATION ISSUES

- Continual expansion of agricultural activities
- Pollution
- Hunting, collection of birds' eggs
- Removal of aquatic vegetation
- Growth of commercial fisheries
- Drought

Despite its status as a sanctuary and Ramsar site, Kolleru is threatened by encroachments, overfishing, dumping of

industrial effluents, and increasing salinity due to bunding for pisciculture. A temple in the middle of the lake attracts thousands of pilgrims every year, putting additional pressure on the resources, besides creating disturbance and non-degradable garbage.

While the size of the lake/wetland according to the Ramsar Convention is 901 sq. km (all the land within contour 10+), the Government declared just 308 sq. km (within contour 5+) as a wildlife sanctuary. This huge variation is because the size of the lake changes seasonally. The lake that was formed due to the coalescence of the deltaic deposits of Krishna and Godavari rivers was later cut off from the sea. At its prime, the inter-delta lake rose to contour 10+ during the monsoon and shrank to contour 3+ in the summer.

The advent of aquaculture has ruined the lake. Satellite images taken in 2001 showed that approximately 42% of the lake was occupied by aquaculture, while agriculture had encroached another 8.5%. The area under aquaculture contained 1,050 fishponds within the lake and 38 dried-up fishponds, which together covered an area of 103 sq. km.

According to Azeez *et al.* (2011), the lake covers about 901 sq. km within +10 feet contour, 673 sq. km within +7 feet contour, and 135 sq. km within +3 feet contour. In monsoon, the lake spreads generally over +5 feet contour with a water holding capacity of 300 million cubic metres. Every few years, the lake spreads over +7 feet contour and the storage of water at this level would be 508.4 million cubic metres. On an average, once in eight years the lake



V. KANNAN

Kolleru Lake is surrounded by dense human population and is therefore under tremendous biotic pressure

fills to above +9 feet contour, holding up to 1,222 million cubic metres of water in contrast to the storage of about 150 million cubic metres at c. +3 feet contour. The floods caused by Cyclone Nilam, in November 2012, in the various drains that empty into Kolleru Lake caused the water to rise and cross the +8 contour. If water in the lake crosses the +5 contour, 22 villages in Krishna and 38 villages in West Godavari get marooned. If it touches +7 contour, 10 more villages in West Godavari get marooned, and if it rises to +10 contour, another 23 villages in West Godavari get marooned. Politicians are demanding that the sanctuary should be reduced to +3 feet contour. This is a very dangerous request, as once it is done, further large-scale encroachment will take place. This will result in short-term political gains, but considering that the east coast is cyclone-prone, another Nilam-like cyclone would result in large-scale destruction.

Kolleru is surrounded by dense human habitation, which has been encroaching the lake for agriculture and fisheries. Nearly 34,000 ha have been drained and subsequently encroached in recent years for farmlands and fishponds (Anon. 1991). The area under the ponds constituted about 40% of the expanse of the Kolleru Lake, but in 2006, the Central Empowered Committee (CEC) appointed by the Supreme Court to monitor environmental issues in the country directed the State Government to remove all illegal fish farms and other encroachments from the lake, but at the same time ensured that traditional fishing which does not adversely affect the environment is not stopped. The Government launched the operation and completed it by the end of March 2006, in spite of counter pressure from the aqua-farmer lobby (Islam & Rahmani 2008).

In several areas, large scale breeding of domestic ducks is conducted (Anon. 1991). Another problem is the introduction of Java Tilapia *Oreochromis mossambicus* (Scott 1989) for commercial purposes, which has replaced many native fish species. Poaching is yet another issue, which though often highlighted by the media, remains unresolved as influential people are involved and no one is punished. In June, 2012, mass fish mortality took place due to adverse environmental conditions.

The State Forest Department has taken many conservation measures to protect and enhance the breeding of resident species, including Spot-billed Pelican. Iron stands have been erected to facilitate the birds for nesting near Atapaka village in Kolleru. This resulted in raising nearly 200 pelican chicks in 2012.

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IBA team, P.A. Azeez.

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- Links**
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MANJIRA WILDLIFE SANCTUARY

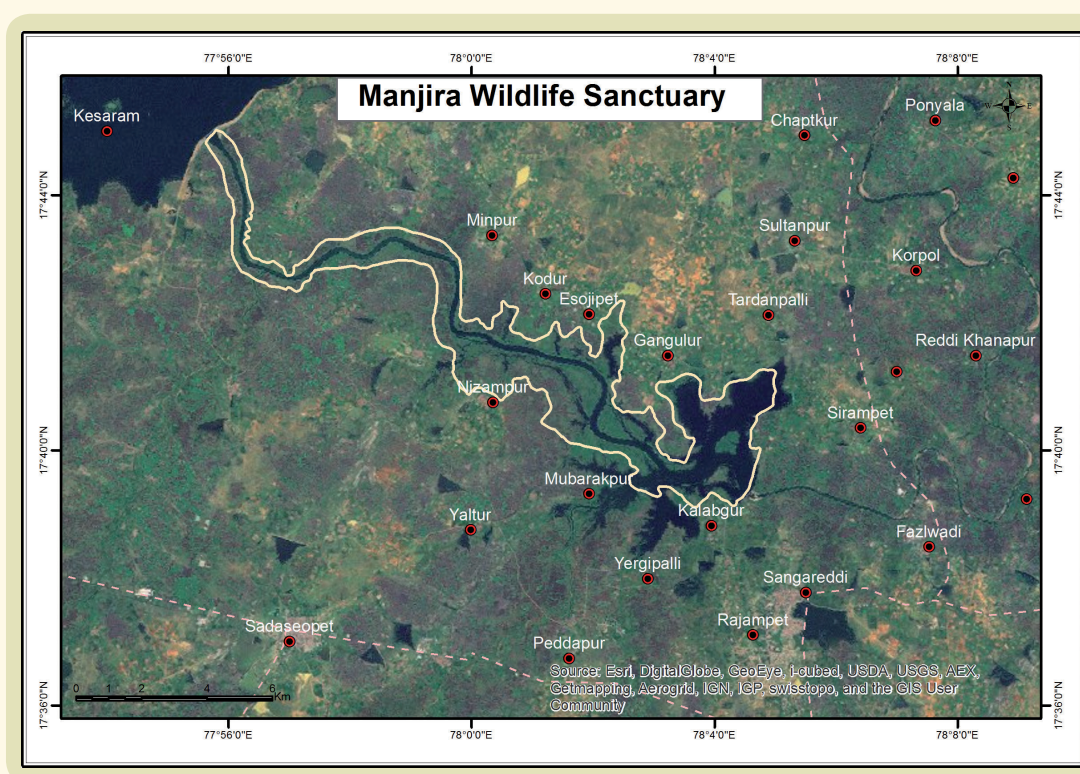
IN-AP-05

IBA Site Code	: IN-AP-05
Administrative Region (State)	: Telangana (erstwhile Andhra Pradesh)
District	: Medak
Coordinates	: 17° 57' 52" N, 78° 02' 22" E
Ownership	: State

Area	: 2,000 ha
Altitude	: Not available
Rainfall	: 915 mm
Temperature	: 15 °C to 42 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Riverine Wetland

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii (≥ 20,000 waterbirds)

PROTECTION STATUS : Wildlife Sanctuary, established May, 1978.



GENERAL DESCRIPTION

Manjira Wildlife Sanctuary in Medak district, located 50 km northwest of Hyderabad, is recognized as an important wetland for migratory birds. The waterbody provides considerable ecological diversity to support a large population of wetland birds. The reservoir provides drinking water to Hyderabad and Secunderabad, hence water is always stored even during the dry season. The reservoir has several islands with extensive marshy fringes, which provide good nesting sites for waterbirds.

Interestingly, Manjira was declared as a sanctuary not for its large congregation of birds, but for its small population of the Mugger *Crocodylus palustris* (Vijaya Kumar & Choudhury 1994). An area of 2,800 ha between Singur and Manjira Barrage was declared a crocodile sanctuary in June

1978 (Vijaya Kumar 1988–1992). In the mid 1980s, Manjira became known to birdwatchers and an annual waterfowl count was initiated.

The reservoir supports submergent and emergent vegetation. A narrow margin of *Typha*, *Ipomoea*, and *Acacia* fringes the waterline, while agricultural fields surround the reservoir and the river (Vijaya Kumar & Choudhury 1994). The river does not flow through the forested area. In the dry savannah type vegetation, scattered *Acacia*, *Prosopis*, *Tamarindus indica*, and *Azadirachta indica* are seen.

Islam & Rahmani (2008) proposed Manjira Wildlife Sanctuary as a Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland regularly supports (≥20,000 waterbirds), and Criteria 6 (wetland regularly

supports 1% of the individuals in a population of one species or subspecies). According to the Ramsar Wetland Types, Manjira is Type 6 (water storage reservoir).

AVIFAUNA

Based on studies between December, 2010 and October, 2012, Prasad *et al.* (2014) have identified a total of 164 bird species. Earlier, 73 species of birds were recorded from this site (Vijaya Kumar & Choudhury 1994, 1995; Vijaya Kumar 1988–1992), including many species of Biome 11 (Indo-Malayan Tropical Dry Zone). During winter, there are usually 30,000 birds (Vijaya Kumar 1988–1992). Although the number of the species present during winter remains roughly the same, the species populations fluctuate. A very large congregation of Common Teal *Anas crecca* and Cotton Pygmy-goose *Nettapus coromandelianus* is found. Sometimes more than 1,500 Ruddy Shelduck *Tadorna ferruginea* are seen (Vijaya Kumar & Choudhury 1995). A Greater Flamingo *Phoenicopterus roseus*, ringed in 1971–1974 in Lake Rezaiyeh, Azerbaijan, Iran was recovered here in the winter of 1986–1987 (Vijaya Kumar 1988–1992).

Fourteen species of birds breed in Manjira, Painted Stork *Mycteria leucocephala* (Near Threatened), Eurasian Coot *Fulica atra*, and Black-crowned Night-heron *Nycticorax nycticorax* being the most significant breeders (Vijaya Kumar & Choudhury 1994).

Many species are present in this IBA in much higher numbers than their 1% biogeographic population threshold determined by Wetlands International (2012). For instance, the biogeographic population of Bar-headed Goose *Anser*

VULNERABLE	
Lesser Adjutant	<i>Leptoptilos javanicus</i>
Indian Skimmer	<i>Rynchops albicollis</i>
Greater Spotted Eagle	<i>Aquila clanga</i>
NEAR THREATENED	
Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Black-tailed Godwit	<i>Limosa limosa</i>
River Tern	<i>Sterna aurantia</i>

indicus is estimated to be between 52,000 to 60,000 (Wetlands International 2012). At Manjira, up to 500 are found regularly which is almost 1% of the population. To give a more specific example, about 3% of the non-breeding population of Ruddy Shelduck *Tadorna ferruginea* winters in Manjira. Wetlands International (2012) estimates about 50,000 individuals of this species in South Asia, and in Manjira, Vijaya Kumar & Choudhury (1995) found up to 1,500.

When the rainfall is inadequate in northwest India, large numbers of Demoiselle Crane *Grus virgo* are seen in peninsular India. For instance, 1986–1987 saw extreme drought conditions in Gujarat, the main stronghold of Demoiselle Crane and Common Crane *Grus grus*. In January 1987, c. 3,000 Demoiselle Crane were seen in Manjira which, according to recent population estimates by Wetlands International (2012), would be 3% of the total population of this species wintering in the Indian subcontinent. Such examples reinforce the importance of having a chain of IBAs in the general range of distribution of species, so that if one



ASAD R. RAHMANI

An area of 2,800 ha between Singur and Manjira Barrage was declared a crocodile sanctuary in 1978



NAYAN KHANOLKAR

Man-made wetlands such as Manjira provide much-needed habitat to extensively hunted species like the Bar-headed Goose *Anser indicus*

region is affected by human pressures or environmental factors, the species has other areas to fall back upon.

More recently, Lesser Adjutant *Leptoptilos javanicus* and Indian Skimmer *Rynchops albicollis*, both Vulnerable species, were sighted at Manjira (A. Pittie, *pers. comm.* 2001).

OTHER KEY FAUNA

Among other fauna, an important species is the Marsh Crocodile or Mugger *Crocodylus palustris*.

LAND USE

- Nature conservation and research
- Drinking water source
- Agriculture
- Fishing

THREATS AND CONSERVATION ISSUES

- Agriculture
- Fuel wood collection
- Grazing

On the northwest boundary of Manjira wetland, a larger waterbody has been formed by damming the Manjira river at Singur, where Vijaya Kumar & Choudhury (1989) found nearly 22,000 birds including Red-crested Pochard *Rhodonessa rufina* and Bar-headed Goose *Anser indicus*, which were not seen in Manjira WLS. This area should be added to the notified area to develop Manjira-Singur Waterfowl Sanctuary.

Incidentally, the Mugger population in Singur is quite good (Vijaya Kumar & Choudhury 1989).

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V. Vijaya Kumar, Aasheesh Pittie, B.C. Choudhury.

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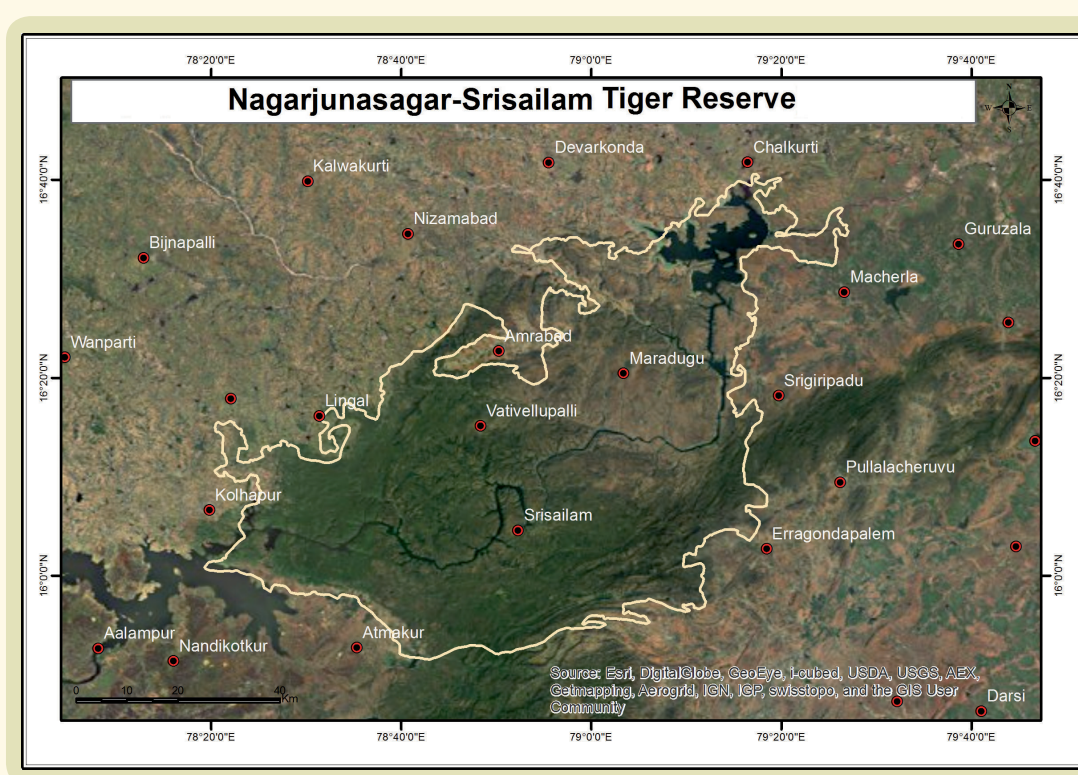
NAGARJUNASAGAR-SRISAILAM TIGER RESERVE

IN-AP-06

IBA Site Code	: IN-AP-06	Ownership	: State
Administrative Region (State)	: Andhra Pradesh and Telangana	Area	: 356,809 ha
Districts	: Nalgonda, Mahabubnagar, Kurnool, Prakasam, Guntur	Altitude	: 100–917 msl
Coordinates	: 16° 31' 30" N, 79° 19' 00" E	Rainfall	: 1,000 mm
		Temperature	: 8 °C to 43 °C
		Biogeographic Zone	: Deccan Peninsula
		Habitats	: Sub-tropical Dry Evergreen Forest

IBA CRITERIA : A1 (Threatened Species)

PROTECTION STATUS : Wildlife Sanctuary, established July, 1978.
Declared Tiger Reserve under Project Tiger, 1983.



GENERAL DESCRIPTION

Nagarjunasagar-Srisailam Tiger Reserve spreads over five districts in two states: Nalgonda, Mahabubnagar in Telangana and Kurnool, Prakasam, and Guntur in Andhra Pradesh. It was renamed Rajiv Gandhi Wildlife Sanctuary in 1992. The landscape is hilly and varies from plains to precipitous cliffs. The wildlife is generally confined to the plateaus during the monsoon and to the valleys in the summer. Perennial water sources are located in the valley, while the plateaus suffer from acute water scarcity in the summer. The River Krishna flows over a distance of 130 km through the reserve. The multipurpose reservoirs, Srisailam and Nagarjunasagar, which are an important

source of irrigation and power for Andhra Pradesh, are located within the reserve. The area receives rainfall from both the southwest and northeast monsoons.

The vegetation is essentially Southern Tropical Mixed Forest (Champion & Seth 1968). Important tree species are *Tectona grandis*, *Terminalia tomentosa*, *Anogeissus latifolia*, *Butea frondosa*, *Pterocarpus marsupium*, and *Hardwickia binata*. Trees of *Acacia arabica*, *Madhuca indica*, and *Hardwickia binata* stand interspersed in the scrub dominated by *Calotropis gigantea*, *Ziziphus oenoplia*, *Grewia* spp., and *Cassia auriculata*. Occasional clumps of bamboo are encountered on the hillsides and on the banks of forest streams. The invasive *Lantana*, *Parthenium*,

CRITICALLY ENDANGERED

White-rumped Vulture	<i>Gyps bengalensis</i>
Long-billed Vulture	<i>Gyps indicus</i>
Red-headed Vulture	<i>Aegypius calvus</i>

ENDANGERED

Egyptian Vulture	<i>Neophron percnopterus</i>
Black-bellied Tern	<i>Sterna acuticauda</i>

VULNERABLE

Asian Woollyneck	<i>Ciconia episcopus</i>
Greater Spotted Eagle	<i>Clanga clanga</i>
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>

NEAR THREATENED

Ferruginous Duck	<i>Aythya nyroca</i>
Painted Stork	<i>Mycteria leucocephala</i>
Grey-headed Fish-eagle	<i>Ichthyophaga ichthyaetus</i>
Red-headed Falcon	<i>Falco chicquera</i>
Pallid Harrier	<i>Circus macrourus</i>

Durania, and *Strobilanthes* grow profusely in this area (Rao *et al.* 1997).

In July 2012, the State Forest Department declared an area of 1,175 sq. km around the Nagarjunasagar-Srisailem Tiger Reserve (NSTR) as a buffer zone. The declaration came after the department conducted a three-month survey of villages in and around the tiger reserve. Under Section 38(b) of the Indian Wildlife (Protection) Act, 1972, the state must notify the core and buffer areas of a tiger reserve for effective conservation of threatened species, and arrange security at buffer areas as they are the interface between the reserve's core area and human habitation. NSTR has a total critical tiger habitat area of c. 3,600 sq. km and as per the latest census, the tiger population has been pegged at anywhere between 53 and 67 tigers.

AVIFAUNA

About 242 species of birds have been recorded from this site (Rao *et al.* 1997). The website of Project Tiger mentions a total of 303 bird species. Most of them belong to tropical dry deciduous forest habitats and are generally common. The large expanse of undisturbed forest, especially in the core area, probably constitutes the best of its kind in India. BirdLife International (undated) has identified 59 Biome 11 species (Indo-Malayan Tropical Dry Zone), of which 36 have been sighted here.

The globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus* was seen in April, 1997 near Umamaheshwaram, close to Mannanur (Srinivasulu & Rao 2000).

Some Near Threatened species, identified by BirdLife International (2001), are also listed by Rao *et al.* (1997) in their comprehensive checklist. The Greater Spotted Eagle *Clanga clanga*, considered Vulnerable by BirdLife

International (2001), is regularly seen around the waterbodies that have formed due to the dams.

Despite protection during the last 25 years as a reserve forest, sanctuary, and now tiger reserve, the forest cover and quality appears to be deteriorating since the time Dr Sálím Ali collected birds here in the former Hyderabad State in the early 1930s (Ali 1933a, b, c; 1934a, b). As pointed out by Rao *et al.* (1997), Ali recorded 105 bird species from this region, especially at Mannanur, Amrabad Plateau, and Farahabad. Some of the dense forest species recorded by Ali, such as Indian Scimitar-babbler *Pomatorhinus horsfieldii*, Malabar Trogon *Harpactes fasciatus*, and Nilgiri Wood-pigeon *Columba elphinstoni*, are no longer seen. The latter species is confined to the Western Ghats (Ali & Ripley 1987, Grimmett *et al.* 1999) and is listed as Vulnerable (BirdLife International 2001). The status of vultures has deteriorated and all species are infrequently seen.

OTHER KEY FAUNA

Nagarjunasagar-Srisailem is one of the largest tiger reserves in India. Project Tiger documented 80 species of mammals, 20 species of amphibians, c. 100 species of butterflies, 57 species of moths, and 35 species of dragonflies and damselflies.

Besides the Tiger, the reserve has Leopard *Panthera pardus*, Wild Dog *Cuon alpinus*, Golden Jackal *Canis aureus*, Grey Wolf *Canis lupus*, Sambar *Rusa unicolor*, Cheetal *Axis axis*, and Wild Boar *Sus scrofa*. Blackbuck *Antelope cervicapra* is present outside the reserve in open areas. The Mouse Deer *Moschiola indica* is also found, but it is extremely difficult to see due to its small size and secretive nature.

LAND USE

- Conservation and research
- Forestry
- Dam: irrigation and power

THREATS AND CONSERVATION ISSUES

- Poaching
- Fire
- Grazing
- Vehicular traffic
- Water scarcity

Funds available to manage the reserve are inadequate and there is a lack of trained staff. There is a livestock population of about 15,000 in the core area and 43,350 in the non-core area. In addition, about 300,000 nomadic cattle graze in the reserve and the forest floor is set on fire to encourage growth of new grasses by the nomadic cattle graziers. Timber is smuggled from the reserve down to the plains, to meet the minor timber and fuel wood demands of all the surrounding districts.



ASAD R. RAHMANI

Nagarjunasagar-Srisaillam Tiger Reserve is one of the largest tiger reserves in India. It is also an excellent habitat for a large number of Globally Threatened bird species

About 200 villages are situated in and around the reserve, of which 120 villages are within the sanctuary. The Chenchus are a primitive, semi-nomadic tribe, living in bamboo huts called *gudems*. The core area houses 23 *gudems*, but due to their simple lifestyle, these tribals are not considered a major threat to the forest and its biodiversity. The biggest threat comes from armed rebels or Naxalites, who hide in the forest and exploit natural resources and villagers. Many Naxalites indulge in poaching.

One highway passes through the reserve and another runs along its boundary. The reserve is also threatened by the ecological impacts of irrigation projects and hydroelectric projects. There is a plan to divert Srisaillam water through a tunnel to various towns. Several electric lines are being laid through the reserve. Several families staying within the reserve are dependent on selling fuel wood and making leaf plates for a living.

Poaching is rampant in some parts such as Nallamala Range where the tiger has almost been wiped out.

The Atomic Mineral Division has requested permission to exploit uranium deposits in c. 700 ha at Chitrial in Guntur district. The area is likely to yield 30 million tonnes of uranium ore.

KEY CONTRIBUTOR

IBA Team

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Links

[p://newindianexpress.com/states/andhra_pradesh/article564926.ece](http://newindianexpress.com/states/andhra_pradesh/article564926.ece)

<http://timesofindia.indiatimes.com/home/environment/wild-wacky/Caught-on-camera-Rising-tiger-population/articleshow/18473517.cms>

NELAPATTU BIRD SANCTUARY

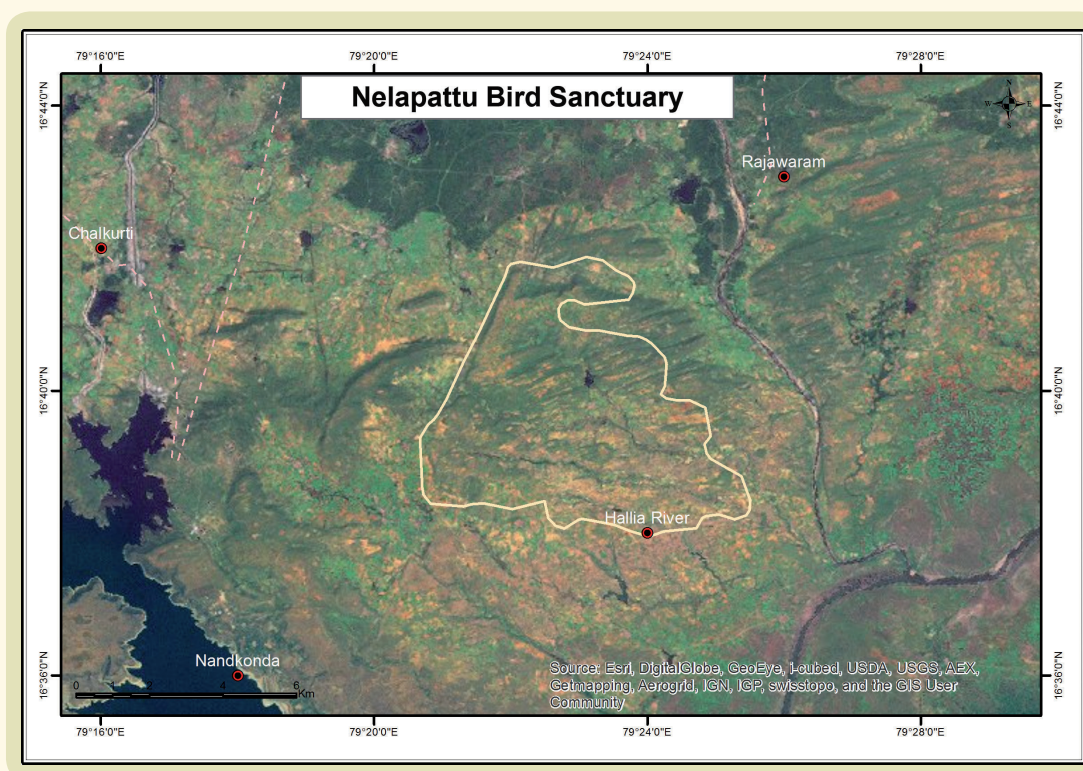
IN-AP-07

IBA Site Code	: IN-AP-07
Administrative Region (State)	: Andhra Pradesh
District	: Nellore
Coordinates	: 13° 50' 14" N, 79° 59' 06" E
Ownership	: State
Area	: 458.92 ha

Altitude	: c. 30 msl
Rainfall	: 1,000 mm
Temperature	: 23 °C to 45 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Littoral Forest, Tropical Secondary Scrub

IBA CRITERIA : A1 (Threatened species)

PROTECTION STATUS : Bird Sanctuary, established September, 1976.



GENERAL DESCRIPTION

Nelapattu Bird Sanctuary, named after the village of the same name in Doravani Sathram Mandal of Nellore district, was notified in 1976. The sanctuary is divided into the following components: Kallur Reserve Forest Area (288.14 ha), Nelapattu Tank Area (82.56 ha), and Unreserved Forest Area (88.22 ha). The sanctuary supports the largest pelicanry of Spot-billed Pelican *Pelecanus philippensis* in India. It is also a breeding site for Black-headed Ibis *Threskiornis melanocephalus*, Asian Openbill *Anastomus oscitans*, Black-crowned Night-heron *Nycticorax nycticorax*, and Little Cormorant *Microcarbo niger*. It is a breeding and roosting haven for a broad spectrum of bird species. Villagers protect the birds as they believe that these winged visitors will bring good rains and harvest in the district.

About 12 km from Nelapattu Bird Sanctuary lies village Vedurupattu, where hundreds of Painted Stork *Mycteria leucocephala* used to breed (Philip *et al.* 1998) but now very few do. Both these sites can be considered as one IBA.

The sanctuary has Swamp Forest in the tank portion and Southern Dry Evergreen Scrub Forests in the reserve and unreserved forest. The dominant species are *Manilkara hexandra*, *Maba buxifolia*, and *Buchanania angustifolia*, in the reserve and unreserved forest areas, and *Barringtonia acutangula* in the tank area.

Islam & Rahmani (2008) proposed Nelapattu Wildlife Sanctuary as a Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland regularly supports $\geq 20,000$ waterbirds), and Criteria 6 (wetland regularly

supports 1% of the individuals in a population of one species or subspecies). According to the Ramsar Wetland Types, Nelapattu has Type H (intertidal brackish and freshwater marshes) and Type J (coastal brackish lagoons).

AVIFAUNA

About 187 bird species are known to occur in the sanctuary, of which 50 are migratory (Sharma & Raghavaiah 2002). The Grey or Spot-billed Pelican *Pelecanus philippensis*, Black-headed Ibis *Threskiornis melanocephalus*, Asian Openbill, Little Cormorant, Eurasian Spoonbill *Platalea leucorodia* and Black-crowned Night-heron are some of the major breeders. Other waterfowl species include Little Grebe or Dabchick *Tachybaptus ruficollis*, Northern Pintail *Anas acuta*, Common Teal *Anas crecca*, Gadwall *A. strepera*, Northern Shoveller *Spatula clypeata*, Garganey *Querquedula querquedula*, Eurasian Coot *Fulica atra*, Grey Heron *Ardea cinerea*, Oriental Darter *Anhinga melanogaster*, Black-winged Stilt *Himantopus himantopus*, and various egrets, terns, and other waders.

Nelapattu is one of the most important pelicanries in India, but the number of breeding pairs has decreased, judging from 1,500 nests during its heyday to 300–350 nests

in 1980–1981, and only 100 pairs in 1990 (Santharam 1993). V. Kannan of the BNHS counted 265 nests in 2002–2003, but according to the Forest Department, between 350 and 500 nests were present, and over 750 chicks hatched in the 2002–2003 season (N. Shiva Kumar, *in litt.* 2003).

Beside the Spot-billed Pelican, other species also breed in Nelapattu tank. In 1997, Philip *et al.* (1998) found 951 adults and chicks of Asian Openbill, 121 of Black-headed Ibis, 3,445 of Little Cormorant, 182 of Black-crowned Night-heron, 337 of Little Egret *Egretta garzetta*, 152 of Cattle Egret *Bubulcus ibis*, and 76 of Little Grebe.

In the village Vedurupattu, about 12 km from Nelapattu, Philip *et al.* (1998) reported more than 1,300 Painted Stork adults and chicks. The birds nest right in the middle of the village on large trees and the villagers even raise the fallen chicks till they are able to fly. But according to Manakadan & Kannan (2003), breeding was not noticed during 2002 and 2003. For the last one decade arrival of Painted Storks to Vedurupattu has considerably decreased. Now hardly 10 to 12 birds visit this area and in some years, no Painted Stork came to Vedurupattu (M. Rao, *in litt.* 2014). Instead, a good Painted Stork colony has been established in Sriharikota Island in Pulicat Wildlife Sanctuary (an IBA).

NEAR THREATENED

Spot-billed Pelican	<i>Pelecanus philippensis</i>
Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>

OTHER KEY FAUNA

There are no large mammals in the sanctuary. However, Golden Jackal *Canis aureus*, Black-naped Hare *Lepus nigricollis*, Monitor Lizard *Varanus bengalensis*, tortoises and some species of snakes are recorded.



RAJUT MANAKADAN

Nelapattu is one of the most important pelicanries in India. Besides Spot-billed Pelican *Pelecanus philippensis*, Oriental Darter *Anhinga melanogaster*, Painted Stork *Mycteria leucocephala*, Black-headed Ibis *Threskiornis melanocephalus*, and egrets breed in this well protected sanctuary

Guptha *et al.* (2012) have listed 12 species of amphibians and 30 species of reptiles, including 18 species of snakes and 12 of lizards from this IBA.

In 2012, the wildlife officials of Sullurpeta Division spotted a rare insectivorous plant, *Drosera burmanni*, on the tank bed of Nelapattu Bird Sanctuary. The plant is considered to have medicinal value in traditional Ayurveda and homeopathic medicine.

LAND USE

- Forestry
- Fishing

THREATS AND CONSERVATION ISSUES

- Pumping out of water from tank
- Decline in *Barringtonia* trees

Local people treat the birds as celestial beings and offer them protection. Droppings of pelican and other birds enrich the soil and water, which is used by the villagers for irrigation.

The pivotal conservation issue on which the survival of this pelicanry depends is the growth of *Barringtonia* trees. Since the devastating cyclone of 1984, during which large numbers of old *Barringtonia* trees were uprooted and the tank bund breached, the sanctuary has not regained its past glory. Of the 120 trees in the tank before the cyclone, less than 40 now survive and even they are under tremendous pressure (Santharam 1993).

Another problem is the pumping out of tank water by rich farmers, exposing the nests to terrestrial predators and human disturbance. The pelican and other birds nest on submerged *Barringtonia* trees. Earlier, the trees used to be surrounded by water for many months, till the chicks were able to fly. But now, influential farmers draw out the water using motor pumps, thus the tank dries up much faster. Sharma & Raghavaiah (2002) have shown a direct correlation between rainfall (and water level in the tank) and breeding success of the pelicans. If Nelapattu Bird Sanctuary is to be saved, the Forest Department and the local villagers should regulate the use of water to ensure that some water remains till the pelican chicks are able to fly.

To safeguard the interests of the villagers, the Wildlife Wing of the Forest Department has taken up ecodevelopmental activities. These include an agricultural improvement programme by drilling bore wells for irrigation and drinking water. To reduce dependency on the sanctuary area for their fuel wood requirement, alternative energy sources like biogas plants and smokeless *chulhas* (stoves)

are provided. To meet the fodder requirement of cattle, silvopasture plantations are being raised. Apart from this, laying of road to the village and planting avenue trees has also been taken up.

The major foraging ground for the birds of Nelapattu, Pulicat Lake, is under threat with the proposal of a major sea port planned at Durgarajupatnam, Pulicat Lake (an IBA).

The Wildlife Wing has taken various steps to enhance the sanctuary by building mounds and planting trees for heronry birds to nest. Fish seedlings are also released to increase the food for birds. A two-day Flamingo Festival is organized to raise awareness of nature conservation.

The Forest Department officials have made special plans for developing permanent facilities at the Nelapattu Bird Sanctuary for deer which were rescued from nearby villages and forest areas in Doravarisatram *mandal* in Nellore district. Fifteen Spotted Deer *Axis axis* and five Blackbuck *Antelope cervicapra* have been rescued from nearby areas during the past year, and placed in a temporary enclosure.

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Links

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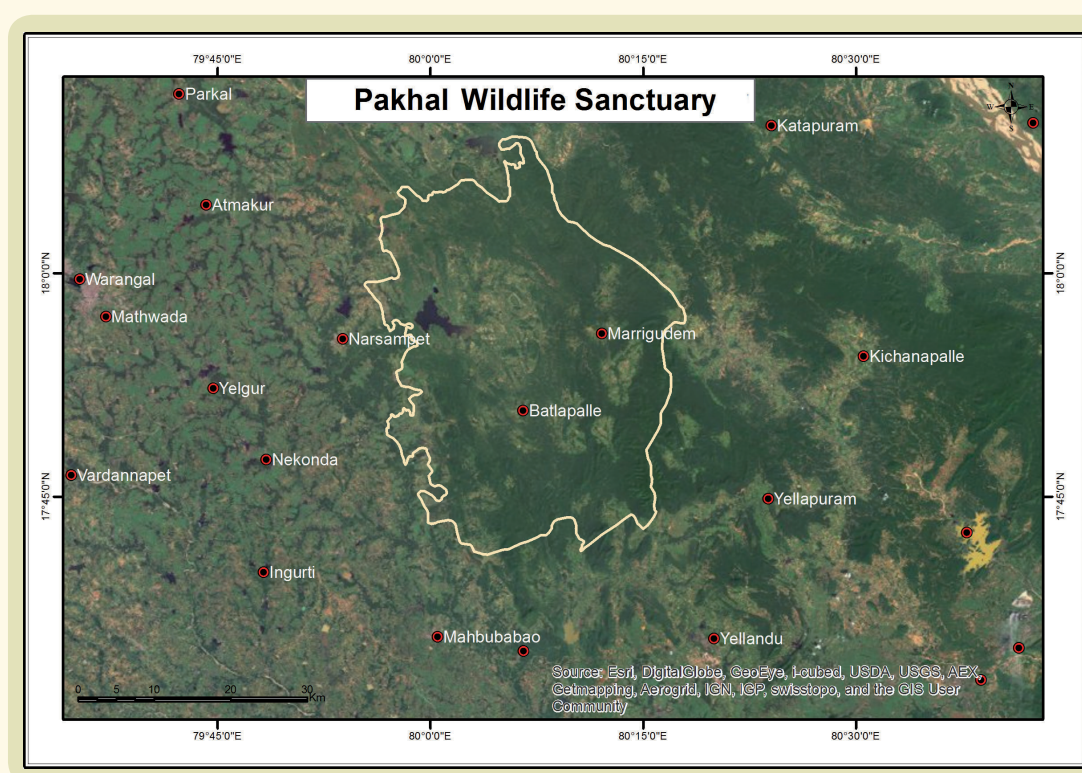
PAKHAL WILDLIFE SANCTUARY

IN-AP-08

IBA Site Code	: IN-AP-08	Area	: 87,930 ha
Administrative region (State)	: Telangana (erstwhile Andhra Pradesh)	Altitude	: 250 msl
District	: Warangal	Rainfall	: 1,000 mm
Coordinates	: 17° 54' 07" N, 80° 04' 51" E	Temperature	: 15 °C to 45 °C
Ownership	: State	Biogeographic Zone	: Deccan Peninsula
		Habitats	: Southern Mixed Deciduous Forest

IBA CRITERIA : A4iii (≥ 20,000 waterbirds), Data Deficient

PROTECTION STATUS : Wildlife Sanctuary, established March, 1952.



GENERAL DESCRIPTION

Pakhal Wildlife Sanctuary is a Dry Deciduous teak forest with a small freshwater lake, now in the newly created state of Telangana. The 1,500 ha lake was created in the 16th century by constructing an earthen dam, which was renovated in 1918 (Spillet 1968, Scott 1989). The lake provides water to irrigate almost 9,000 acres of farmland, and is also of considerable significance for the avifauna which remains undisturbed within the sanctuary. The lake and its environs form the core area of Pakhal Wildlife Sanctuary. The lake is fed by numerous ephemeral and seasonal streams. Pakhal is 60 km from Warangal (Kazipet) railway station and 250 km from Hyderabad by road.

The lake supports a luxuriant growth of aquatic and emergent marsh vegetation. The extensive grasslands

around the lake are composed of *Apluda*, *Eragrostis*, *Heteropogon*, and *Vetiveria*. Dominant trees near the lake include *Barringtonia* and *Xeromphis*. The other common trees include species of *Terminalia*, *Anogeissus*, *Cleistanthus*, *Boswellia*, *Chloroxylon*, *Diospyros*, *Acacia*, and *Sterculia*.

Islam & Rahmani (2008) recommended Pakhal as a Ramsar Site as it qualifies for Ramsar Criteria 4 (wetland provides refuge during adverse conditions to threatened species), and Criteria 5 (wetland regularly supports 20,000 or more waterbirds).

AVIFAUNA

The lake is known to support large congregations of migratory waterfowl. However, no study has been conducted



ASAD R. RAHMANI

Pakhal Lake in the core area of the sanctuary is surrounded by dense forest and grassland

VULNERABLE

Asian Woollyneck	<i>Ciconia episcopus</i>
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NEAR THREATENED

Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>

BIOME 11: Indo-Malayan Tropical Dry Zone

Red-naped Ibis	<i>Pseudibis papillosa</i>
Indian Grey Hornbill	<i>Ocyeros birostris</i>
Rufous-winged Lark	<i>Mirafra assamica</i>
Ashy-crowned Sparrow-lark	<i>Eremopterix griseus</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Yellow-billed Babbler	<i>Turdoides affinis</i>
Jungle Prinia	<i>Prinia sylvatica</i>
Ashy Prinia	<i>Prinia socialis</i>

on the avifauna. It probably qualifies for A4iii criteria, as some people claim that more than 20,000 waterfowl are present. Due to inadequate information on the avifauna, this site is being listed as Data Deficient.

Mani (2008) identified 90 species of birds from a brief visit to Pakhal. He was able to identify three Near Threatened species. If a detailed survey is done, many more species are likely to be recorded.

OTHER KEY FAUNA

The forest supports most of the large mammals usually found in dry deciduous forests of Andhra Pradesh, such as Tiger *Panthera tigris*, Leopard *P. pardus*, Spotted Deer *Axis axis*, Sambar *Rusa unicolor*, Nilgai *Boselaphus tragocamelus*, Wild Boar *Sus scrofa*, Gaur *Bos gaurus*,

Sloth Bear *Melursus ursinus*, Wild Dog *Cuon alpinus*, and Striped Hyaena *Hyaena hyaena*. Among the important fish species inhabiting the lake are *Catla catla*, *Labeo rohita*, and *Ophicephalus* sp.

LAND USE

- Nature conservation and research
- Livestock grazing
- Subsistence agriculture

THREATS AND CONSERVATION ISSUES

- Overgrazing by livestock
- Encroachment or settlement
- Cultivation and forest fires
- Collection of firewood

Strict prohibition of domestic livestock grazing is essential. Forest operations, including the collection of minor forest produce, inside the sanctuary must be controlled.

KEY CONTRIBUTORS

Workshop participants and IBA Team

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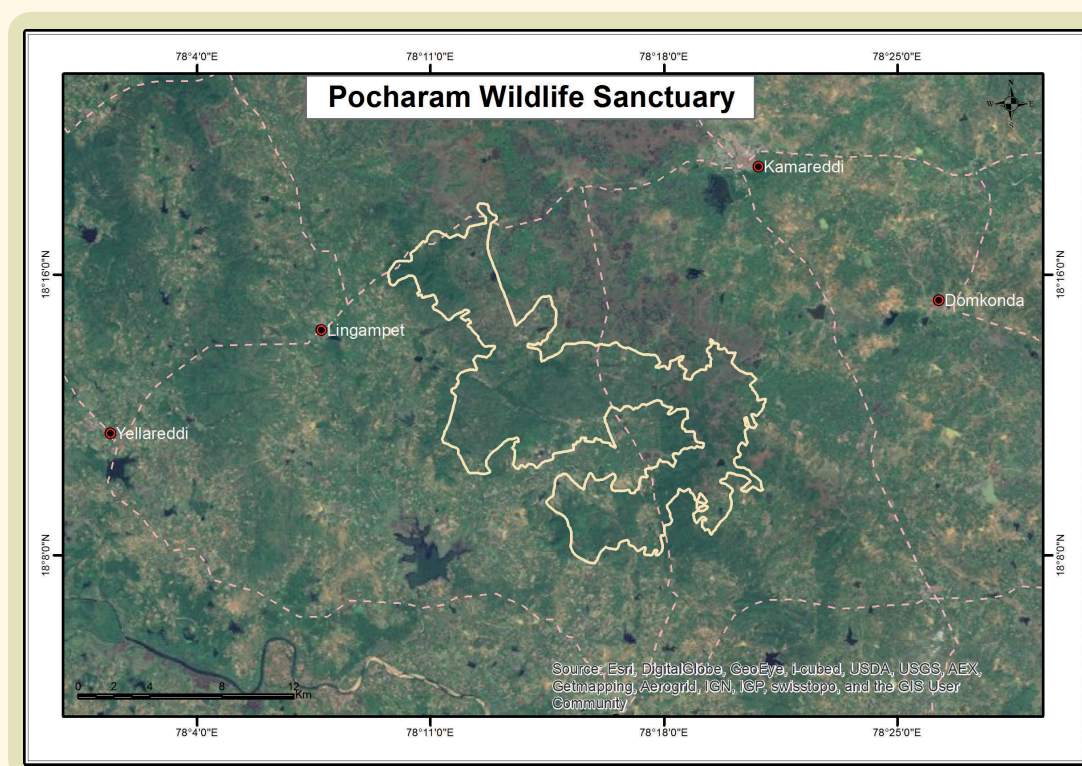
POCHARAM WILDLIFE SANCTUARY

IN-AP-09

IBA Site Code	: IN-AP-09	Area	: 13,000 ha
Administrative Region	: Telangana	Altitude	: 450 msl
(State)	: (erstwhile Andhra Pradesh)	Rainfall	: Not available
District	: Medak, Nizamabad	Temperature	: 6 °C to 46 °C
Coordinates	: 18° 10' 00" N, 78° 12' 00" E	Biogeographic Zone	: Deccan Peninsula
Ownership	: State	Habitats	: Mixed Dry Deciduous Forest

IBA CRITERIA : A1 (Threatened species), A3 (Biome 11: Indo-Malayan Tropical Dry Zone)

PROTECTION STATUS : Wildlife Sanctuary, established February, 1952.



GENERAL DESCRIPTION

Pocharam Wildlife Sanctuary is situated 120 km from Hyderabad by road. It has Mixed Dry Deciduous Forest with patches of scrub and grassy banks. The terrain is undulating, with low hills and small waterbodies. Adjacent to the sanctuary is the Pocharam Reservoir on River Manjira, about 70 km downstream from Manjira Barrage (another IBA). It has been declared as a Biodiversity Heritage Site by the Andhra Pradesh Biodiversity Board. It is one of 17 such sites in the erstwhile state of Andhra Pradesh.

The lake has extensive, marshy fringes and abundant aquatic vegetation typical of the region. The islands were originally wooded, but have recently been cleared. The surrounding areas are mainly agricultural lands with scattered *Acacia* spp.

AVIFAUNA

More than 70 bird species are reported to be present in Pocharam, according to the Forest Department records. The lake is known to support a variety of both resident and migratory waterfowl. Large numbers of shorebirds are also present. Anguru (2009) recorded one Black-bellied Tern *Sterna acuticauda* and one Asian Woollyneck *Ciconia episcopus* in flight during surveys in 2008 and 2009. Thampy (2009) observed Great Stone Plover (Eurasian Thick-knee) *Esacus recurvirostris*. On February 6, 2011, Srinivasan *et al.* (2012) recorded Jerdon's Baza *Aviceda jerdoni* on a tall tree near the lake in Dantepally area. All around were paddyfields.

OTHER KEY FAUNA

The mammalian fauna in this site includes Leopard



ASAD R. RAHMANI

Pocharam Wildlife Sanctuary is a good representative of tropical dry deciduous forest, till now 26 Biome 11 species have been identified here

CRITICALLY ENDANGERED

Long-billed Vulture *Gyps indicus*

ENDANGERED

Black-bellied Tern *Sterna acuticauda*

VULNERABLE

Asian Woollyneck *Ciconia episcopus*

Indian Skimmer *Rynchops albicollis*

NEAR THREATENED

Black-tailed Godwit *Limosa limosa*

Panthera pardus, Sloth Bear *Melursus ursinus*, Wild Boar *Sus scrofa*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Nilgai *Boselaphus tragocamelus*, Striped Hyaena *Hyaena hyaena*, and Golden Jackal *Canis aureus*.

LAND USE

- Forestry and agriculture
- Water supply for irrigation and domestic use

THREATS AND CONSERVATION ISSUES

- Unsustainable forestry
- Agricultural activities

The reservoir was declared a sanctuary to afford protection to the Marsh Crocodile *Crocodylus palustris*.

KEY CONTRIBUTOR

IBA Team

KEY REFERENCES

Anguru, S. (2009) Trip to Narsapur and Pocharam. *Pitta* 6(5): 3–5.

BIOME 11 (INDO-MALAYAN TROPICAL DRY ZONE)

Long-billed Vulture

Red-headed Falcon

Rain Quail

Jungle Bush-quail

Rock Bush-quail

Painted Bush-quail

Painted Spurfowl

Indian Peafowl

Yellow-wattled Lapwing

Mottled Wood-owl

Common Indian Nightjar

Indian Grey Hornbill

Red-winged Bush-lark

Ashy-crowned Sparrow-lark

Small Minivet

Indian Robin

Large Grey Babbler

Jungle Babbler

White-headed Babbler

Rufous-fronted Prinia

Jungle Prinia

Ashy Prinia

White-browed Fantail

Brahminy Starling

White-bellied Drongo

Ashy Woodswallow

Gyps indicus

Falco chiequera

Coturnix coromandelica

Perdica asiatica

Perdica argoondah

Perdica erythrorhyncha

Galloperdix lunulata

Pavo cristatus

Vanellus malabaricus

Strix ocellata

Caprimulgus asiaticus

Ocyeros birostris

Mirafra erythroptera

Eremopterix griseus

Pericrocotus cinnamomeus

Saxicoloides fulicatus

Turdoides malcolmi

Turdoides striatus

Turdoides affinis

Prinia buehneri

Prinia sylvatica

Prinia socialis

Rhipidura aureola

Sturnus pagodarum

Dicrurus caerulescens

Artamus fuscus

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Link:

[apbiodiversity.ap.nic.in/pdf/Biodiversity_News_Vol2\(4\).pdf](http://apbiodiversity.ap.nic.in/pdf/Biodiversity_News_Vol2(4).pdf)

PULICAT LAKE WILDLIFE SANCTUARY

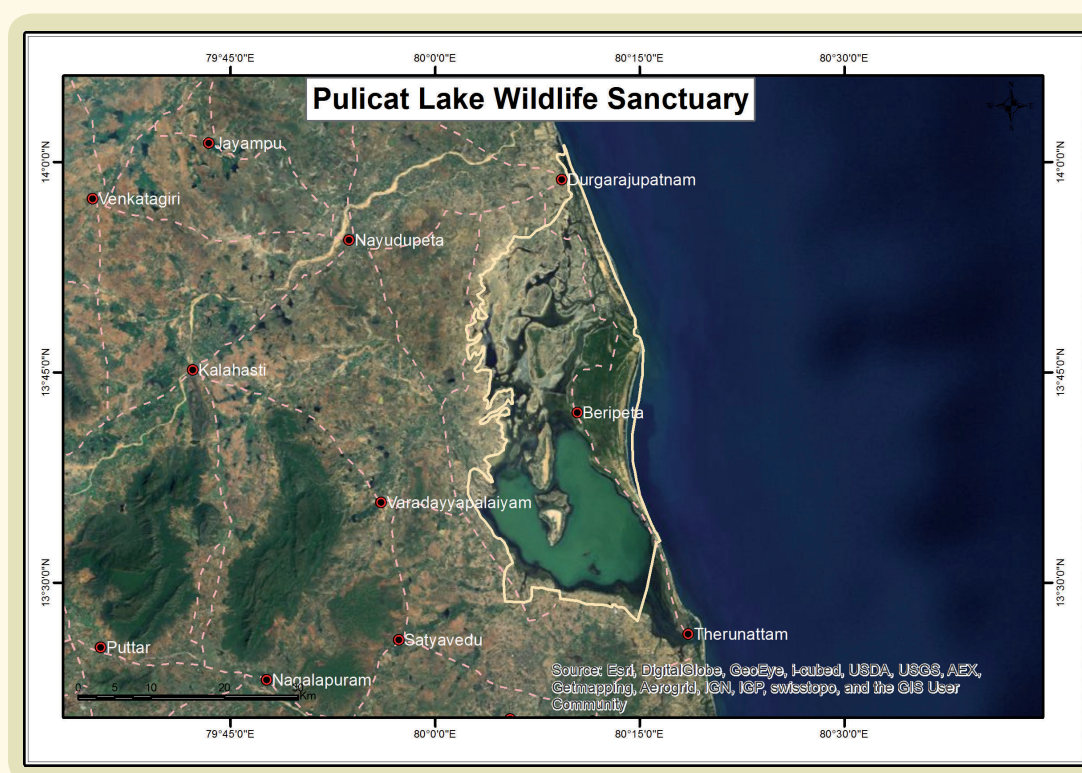
IN-AP-10

IBA Site Code	: IN-AP-10
Administrative Region (State)	: Andhra Pradesh
District	: Nellore
Coordinates	: 13° 40' 00" N, 80° 11' 00" E
Ownership	: State
Area	: 60,000 ha

Altitude	: 0–10 msl
Rainfall	: 1,000 mm
Temperature	: 15 °C to 45 °C
Biogeographic Zone	: Coasts
Habitats	: Littoral Forest, Tropical Dry Evergreen Forest

IBA CRITERIA : A1 (Threatened species), A4iii (≥20,000 waterbirds)

PROTECTION STATUS : Wildlife Sanctuary, established September, 1976.



GENERAL DESCRIPTION

Pulicat Lake is an extensive brackish to saline lagoon with associated marshes and a massive freshwater to brackish swamp to the north. It has two connections with the sea: in general, sea water enters the lagoon through a channel at the northern end of Sriharikota Island, and flows back into the Bay of Bengal through a channel at the southern end. The backwaters attract large congregations of Greater Flamingo *Phoenicopterus roseus* and Lesser Flamingo *Phoeniconaias minor*, Grey Pelican *Pelecanus philippensis*, Painted Stork *Mycteria leucocephala*, Grey Heron *Ardea cinerea*, and species of ducks, teals, terns, gulls, and waders. Pulicat is the third most important wetland for migratory shorebirds on the eastern board of India. It has

been declared as a Biodiversity Heritage Site by the Andhra Pradesh Biodiversity Board.

The lake is 10 km from Sullurpet Railway Station by road, and 50 km from Chennai on the Chennai-Kolkata National Highway (NH 5).

Sriharikota Island, well protected as it is the satellite launching station of the Indian Space Research Organisation (ISRO), has remnants of Tropical Dry Evergreen Forest of considerable botanical interest (Suryanarayana *et al.* 1989, 1998). On the other islands in the lake, where protection is negligible, the exotic *Prosopis chilensis* has invaded many areas (Scott 1989). In the elevated mudflats, succulent halophytes such as *Anthrocnemum indicus*, *Sesuvium portulacastrum*, *Salicornia brachiata*, *Suaeda maritima*, *S.*

monoica, and *S. nudiflora* occur. Submerged macrophytes include species of *Enteromorpha*, *Hypnea*, *Ulva*, *Halophila*, and *Enhalus* (Oswin 1987).

Islam & Rahmani (2008) recommended Pulicat Lake as a Ramsar Site as it qualifies for Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 5 (wetland regularly supports 20,000 or more waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies).

AVIFAUNA

Pulicat Lake is an extremely important area for a variety of resident and Palaearctic migratory waterfowl. The lagoon supports significant populations of Spot-billed Pelican *Pelecanus philippensis*, which is common in Pulicat Lake and breeds in the Nelapattu Heronry. The breeding population was 200+ pairs during 2001–2003 (Manakadan & Kannan 2003) and around 500+ pairs during 2004–2007 (Kannan *et al.* 2008). Large congregations are mainly seen in Pulicat Lake during the onset of breeding in October; otherwise

pelicans occur in smaller flocks or singly. These birds also frequent the larger waterbodies around Pulicat Lake, but avoid those with dense aquatic vegetation.

During the mid-winter waterfowl count in 1988, 83,000 waterfowl were counted in the sanctuary. However, during 1991 and 1992, the numbers were 38,722 and 10,902 respectively (Rao & Mohapatra 1993). The abundance of waterfowl fluctuates mainly with the prevailing water regime.

A total of 88 species of birds have been recorded from Pulicat Bird Sanctuary during a BNHS study (Rao & Mohapatra 1993). Based on a three-year study (December 2004 to November 2007) that covered the entire expanse of Pulicat Lake, and supplemented by records of earlier workers, Kannan *et al.* (2008) have identified 113 bird species, both resident and winter migrant.

This site has been selected as an IBA on the basis of its population of Spot-billed Pelican (Criteria A1) and waterfowl congregation (Criteria A4iii). Pulicat is the major foraging ground of pelicans that breed in Nelapattu Bird Sanctuary,



V. KANNAN

Pulicat is the major foraging ground of Spot-billed Pelicans that breed in Nelapattu Bird Sanctuary, another IBA less than 20 km away

another IBA less than 20 km away. There are a number of waterbodies and heronries along the western edges of Pulicat and the islands in Pulicat Lake, some of which are important for migratory and resident waterbirds (Kannan *et al.* 2008). Another bird of conservation interest is the Black-bellied Tern *Sterna acuticauda*. Kannan *et al.* (2008) recorded two birds in the lake, with records of single birds near Annamalaicherry in December, 2006 and July, 2007.

The lagoon in Pulicat Lake is one of the two major wintering grounds in southeast India for shorebirds (Prater *et al.* 1977). Due to its vastness, only a rough estimate of the wader population is possible (Rao & Mohapatra 1993). Many waders are likely to occur above their 1% geographical population threshold. Therefore, this site would qualify for A4i criteria, as defined by BirdLife International (undated).

Most of the waders are distributed over the extensive mudflats along the Sriharikota-Sulurpet road and near Tada in the southwest part of the lagoon. BNHS has conducted ringing camps in this area, and a notable recovery was that of a Curlew Sandpiper *Calidris testacea* with a Polish ring. Subsequently, it was found that the bird had been banded in the Arctic Circle region of Russia (Rao & Mohapatra 1993).

The Painted Stork is a very common resident species in Pulicat and in the other larger wetlands (Kannan *et*

al. 2008). The highest count obtained between 2004 and 2007 was 645 birds off Beripeta during August, 2006. The species bred in some years in the Vedurupattu-Edhirpattu Heronry (c. 15 pairs) during 2004 and 2007, but this heronry had earlier supported a larger number of nests: 200 nests (Ramakrishna 1996), 273 nests (Philip *et al.* 1998), and 135 nests (Santharam 1998). It appears that the birds have almost totally shifted to the heronries in Sriharikota since the beginning of this century, with regular breeding in the Beripeta heronry supporting more than 200 pairs (Kannan *et al.* 2008).

The Black-tailed Godwit *Limosa limosa*, a Near Threatened species, was a regular winter migrant to Pulicat Lake and Kudiri Tank between 2004 and 2007 (Kannan *et al.* 2008). Large flocks of c. 1,000–2,000 birds were seen during October and January each year near the Venadu mudflats, Kudiri Tank, and adjoining paddyfields.

The only record of the Asian Woollyneck *Ciconia episcopus* was a bird sighted in February, 2001 at the outskirts of Venadu village, an island in Pulicat (Kannan *et al.* 2008). The Eurasian Spoonbill *Platalea leucorodia* was occasionally recorded in Pulicat and other freshwater wetlands in small numbers, with the largest flocks of 170 to 200 birds recorded during April and May, 2006. Rao (1998) described the species as rare on Sriharikota Island, and Manakadan & Sivakumar (2004) recorded it once from Urugayya and Pulicat Lakes.

Another Near Threatened bird of Pulicat Lake and the environs is Lesser Flamingo *Phoeniconaias minor*, which was infrequently recorded by Kannan *et al.* (2008). The highest count was of c. 3,000 birds in May, 2007. Manakadan & Sivakumar (2004) sighted it occasionally during fortnightly censuses in the southern part of the lagoon.

Taher & Pittie (1989) have prepared a checklist of birds of Andhra Pradesh. During ringing at Pulicat Lake in 1990–1991, seven birds were added to the bird list of Andhra Pradesh (Rao & Mohapatra 1994). Interesting among them are the Greater Sand Plover *Charadrius leschenaultii*, Red Knot *Calidris canutus*, Great Knot *C. tenuirostris*, and Black Tern *Chlidonias niger*. The Greater Sand Plover was not sighted during the study of Kannan *et al.* (2008) from December, 2004 to November, 2007. Rao (1998) reported a possible sighting in March, 1991 from the Chandrasikuppam area of Sriharikota Island, and Manakadan & Sivakumar (2004) recorded 14 birds in August, 2002 from the same area.

Pulicat Lake also provides suitable feeding conditions for two species of flamingos. In October 2002, more than 2,000 Greater Flamingo were seen there. According to M. Rao, IBCN State Coordinator, sometimes about 15,000 flamingos are seen. Additionally, in January, 2012, 300,000 ducks were seen in five major flocks. One flock was in the form of a lengthy strip of about 2 km. Interestingly, most of the ducks were male Northern Pintail *Anas acuta*.

CRITICALLY ENDANGERED

White-rumped Vulture (old record) *Gyps bengalensis*

ENDANGERED

Egyptian Vulture *Neophron percnopterus*
Black-bellied Tern *Sterna acuticauda*

VULNERABLE

Marbled Teal *Marmaronetta angustirostris*
Greater Spotted Eagle *Clanga clanga*
Asian Woollyneck *Ciconia episcopus*
Great Knot *Calidris tenuirostris*

NEAR THREATENED

Spot-billed Pelican *Pelecanus philippensis*
Oriental Darter *Anhinga melanogaster*
Painted Stork *Mycteria leucocephala*
Lesser Flamingo *Phoeniconaias minor*
Pallid Harrier *Circus macrourus*
Eurasian Thick-knee *Esacus recurvirostris*
Eurasian Curlew *Numenius arquata*
River Tern *Sterna aurantia*

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

Red-naped Ibis *Pseudibis papillosa*
White-rumped Vulture *Gyps bengalensis*
Yellow-wattled Lapwing *Vanellus malabaricus*
Indian Nightjar *Caprimulgus asiaticus*
Black-rumped Flameback *Dinopium benghalense*
Common Woodshrike *Tephrodornis pondicerianus*
Indian Robin *Saxicoloides fulicatus*
Jungle Babbler *Turdoides striata*



V. KANNAN

The fishing community in Pulicat Lake numbers around 30,000, spread over 50 settlements. Shell fisheries employ a large number of people (above). An average of 1,200 tonnes of fish is harvested annually (below).



V. KANNAN



BUBESH GUPTHA

Based on the studies of BNHS, 113 birds species, both resident and winter migrant, have been identified in Pulicat

Recently, Jacobsen (2010) reported 30 Marbled Teal *Marmaronetta angustirostris* from the birdwatch tower on the SHAR road.

OTHER KEY FAUNA

The mammalian fauna includes Jungle Cat *Felis chaus*, Golden Jackal *Canis aureus*, Wild Boar *Sus scrofa*, Small Indian Mongoose *Herpestes auropunctatus*, and Monitor Lizard *Varanus bengalensis*. Recently, a dead Leopard *Panthera pardus* was found, trapped in the slush in the lake. This was the first record of Leopard from Pulicat Lake (Kannan & Manakadan 2004).

LAND USE

- Fishing
- Sea route
- Space Research Centre

THREATS AND CONSERVATION ISSUES

- Fishing activities
- Illegal prawn farming
- Industrial development on the shores of the lagoon
- Siltation

More than 100,000 people live in 52 villages around the borders and islands of Pulicat Lake. The southernmost end of the lagoon is near the metropolis of Chennai, which burdens it with additional developmental problems. Due

to these and other factors, Pulicat Lake faces a number of threats.

The fishing community in Pulicat Lake numbers around 30,000, spread over 50 settlements. An average of 1,200 tonnes of fish is harvested each year. The catch is made up of 60% prawns, 23% mullets, and the rest largely Clupeoid catfish, Beloniformes, and crabs. Since the northern side of the lake dries up in summer, a large part of the fishing ground is not productive throughout the year. Depletion of fish resources due to over-fishing, use of destructive fishing gear, and changes in the hydrology have resulted in conflicts among fishermen, especially between the fishermen of Andhra Pradesh and Tamil Nadu. Another problem related to fisheries is the conversion of land for prawn aquaculture since 1993, some of which was or is in the sanctuary area. Prawn farms are largely concentrated around Durgarajpatnam, and as of 1994, there were about 32 parties guilty of raising aqua farms illegally in the precincts of the sanctuary (Ramesh 1994, Panini 1996).

Thermal Power Plant

The areas of Pulicat Lake in Tamil Nadu face greater threats than those in Andhra Pradesh. The 630 MW North Chennai Thermal Power Station (NCTPS), the Ennore Satellite Port project, and a proposed petrochemical park are major threats to the lake's ecosystem. Thousands of acres of land have been cleared for these three projects that will progressively damage the ecosystem, stretching

across 40 km from Ennore (20 km north of Chennai) to Pulicat.

The North Chennai Thermal Power Station (NCTPS) draws 4,400 cu. m of fresh water from the Ennore Creek, lets out hot coolant water into the Buckingham Canal, and discharges toxic fly ash, in the form of slurry, into the lagoon. This has resulted in an increase of 5 °C in temperature at the outlets. Despite precipitators and chemical filters, the fly ash contains toxic elements such as arsenic, cadmium, mercury, lead, manganese, fluorine, and beryllium. In Athipattu village, 10 km from NCTPS, the contamination of salt pans has forced the people to give up their occupation. Fly ash is especially harmful as it can be inhaled and leads to permanent respiratory disorders, dermatitis, asthma, bronchitis, and cancer. The silica in fly ash could cause silicosis.

Satellite Port

The site of the Ennore Satellite Port falls in Category I (No-Development Zone) of the Coastal Regulatory Zone (CRZ) classification. The port, a sheltered harbour facility, when fully operational, is expected to handle about 16.12 tonnes of coal, which is the daily requirement for the NCTPS and the thermal power stations at Mettur.

The construction of the breakwaters for the port has caused the sea to ingress 50 m into the mainland that separates the Pulicat lagoon system from the sea. This has caused severe water erosion at Koraikuppam and eight other fishing hamlets in the Pazhaverkadu area, which form an island, with the sea to its east, and the lagoon to the west. This island is home to a fishing community more than 20,000 strong.

Petrochemicals Complex

The Tamil Nadu Industrial Development Corporation (TIDCO) is acquiring 2,900 ha for the proposed Rs. 600 million petrochemicals industrial complex. It is estimated that the proposed complex would require 45,000 cu. m of water per day, an amount that would seriously deplete coastal aquifers.

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Link

[apbiodiversity.ap.nic.in/pdf/Biodiversity_News_Vol2\(4\).pdf](http://apbiodiversity.ap.nic.in/pdf/Biodiversity_News_Vol2(4).pdf)

ROLLAPADU WILDLIFE SANCTUARY

IN-AP-11

IBA Site Code : IN-AP-11

Administrative Region (State) : Andhra Pradesh

District : Kurnool

Coordinates : 15° 45' 00" N,
78° 27' 00" E

Ownership : State

Area : 614 ha

Altitude : Not available

Rainfall : 670 mm

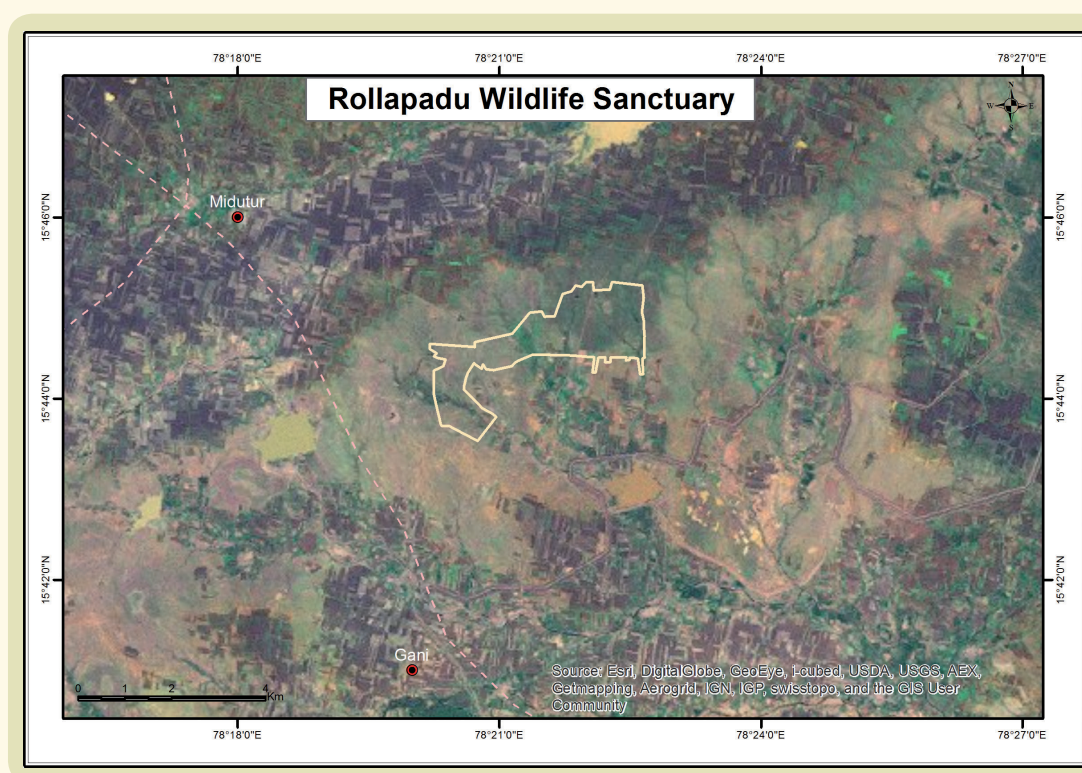
Temperature : 17 °C to 42 °C

Biogeographic Zone : Deccan Peninsula

Habitats : Tropical Grassland

IBA CRITERIA : A1 (Threatened species), A4ii (1% biogeographic population)

PROTECTION STATUS : Wildlife Sanctuary, established 1988. IBA in Danger.



GENERAL DESCRIPTION

Rollapadu is a small village 18 km southeast of Nandikotkur town, in the plains between the Nallamalai and Erramalai ranges of the Eastern Ghats. The River Krishna flows northwest of Nandikotkur. Rollapadu shot to fame in July, 1984 when a flock of 35 Great Indian Bustard *Ardeotis nigriceps* was discovered (Manakadan & Rahmani 1989, 1993). Recommendations were made by the Endangered Species Project of the Bombay Natural History Society to the Andhra Pradesh Forest Department to establish a sanctuary. Soon after, the State Forest Department declared the Rollapadu Great Indian Bustard Sanctuary.

The sanctuary, though established primarily to protect the Great Indian Bustard, has benefited the rest of the wildlife in the area. Prior to its establishment, the animals

were persecuted by professional trappers and hunters from nearby towns and villages (Manakadan & Rahmani 1989).

Most of the sanctuary is covered by grasses. Shrubs and small trees are common near the two small streams that flow within the sanctuary.

AVIFAUNA

In the 1980s, there were about 60–70 bustards in and around Rollapadu and the sanctuary was developing very well, but due to subsequent mismanagement of the grasslands, and poaching of bustards during their movement away from Rollapadu, the bustard population has come down drastically. Now two or three birds remain. Displaying males have not been seen for the last three or four years.

DHIRTIMAN MUKHERJEE



In the three decades of population monitoring, the number of Great Indian Bustard *Ardeotis nigriceps* has declined from 60–80 in the early 1980s to three to four in 2014. The population of Great Indian Bustard is ecologically dead

CRITICALLY ENDANGERED

Great Indian Bustard	<i>Ardeotis nigriceps</i>
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ENDANGERED

Lesser Florican	<i>Sypheotides indicus</i>
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Another globally Threatened species that is regularly seen is the Lesser Florican *Sypheotides indicus* (Sankaran & Manakadan 1990, Manakadan & Rahmani 1999).

A total of 154 bird species are reported in and around Rollapadu Wildlife Sanctuary, which has the second largest roost of harriers in India (Rahmani & Manakadan 1986). Nearly 2,000 harriers of four species are found in the grasslands, namely Montagu’s *Circus pygargus*, Pallid *C. macrourus*, Western Marsh *C. aeruginosus*, and Pied *C. melanoleucos*. This site can easily qualify for A4ii criteria (known or thought to hold, on a regular basis, >1% of the global population of a congregatory seabird or terrestrial species).

OTHER KEY FAUNA

The most conspicuous mammal, which has benefited most

from protection, is the Blackbuck *Antilope cervicapra*. In 1985, its population was not more than 17 individuals. Now, it has gone up to 500 (Forest Department records, and our observations). A pack of Grey Wolf *Canis lupus* inhabits the Rollapadu grasslands. Indian Fox *Vulpes bengalensis* is also found, and shows great fluctuations in population.

LAND USE

- Nature conservation and research

THREATS AND CONSERVATION ISSUES

- Poaching
- Irresponsible management inputs
- Irrigation projects
- Human-wildlife conflict due to crop-raiding by Blackbuck
- Lack of community support

The decline in bustard population has been blamed on the increase of the Blackbuck population from 15–20 in 1985 to nearly 500 in 2002, but this alone cannot be the reason. Most of the time, the majority of the bustards remain outside

the sanctuary, where they are not safe from poachers. The goodwill among villagers generated by the development of the sanctuary has been nullified by the crop damage caused by Blackbuck. Based on two 3-year studies, the BNHS had recommended that Blackbuck numbers should be reduced to less than 100 individuals, and poaching of bustard should be stopped, but this has not been done. Instead, the Forest Department wasted funds on the development of a fence (to prevent Blackbuck from going outside the grasslands) and on construction of waterholes (15 in 600 ha!). Thankfully, the management is now in better hands, and some measures are being taken to reduce the Blackbuck numbers. Even so, unless poaching is curtailed and the cooperation of local villagers gained, the bustard population will keep on declining.

Increasing scrub vegetation in the grasslands (Manakadan *et al.* 2002) is another cause for concern, as it is reducing the bustard habitat.

However, the greatest and irrevocable threat to the Great Indian Bustard is the development of a large irrigation project 3 km from Rollapadu that will change the land use and crop patterns of the area completely. In future, there will be less area available to the bustard for

foraging and nesting. Therefore, it is necessary to monitor the movement of the bustards, through satellite and radio tracking, to record its use of the surrounding landscape and then to develop a long-term conservation strategy to protect pockets of grassland where the bustards spend most of their time. A holistic approach is required to save the bustard by protecting its area, otherwise the measures taken at Rollapadu will not succeed in reviving the bustard population.

In 2011–2012 under the National Species Recovery Programme, a state-level Species Recovery Plan has been prepared by the State Forest Department with inputs from BNHS scientists. A staff training workshop has also been conducted under the BNHS Great Indian Bustard Conservation and Advocacy Programme supported by BirdLife International and Royal Society for Protection of Birds (RSPB). Community consultations with local community members revealed several issues related to crop damage by Blackbuck and inefficient compensation methods.

KEY CONTRIBUTORS

A.R. Rahmani, Ranjit Manakadan, Pramod Patil.



PRAMOD PATIL

Although the grassland habitat within the 614 ha protected area is more or less intact, the area outside has seen drastic land use and crop pattern changes



PRAMOD PATIL

Development of an irrigation canal less than 3 km from Rollapadu has brought land use changes, resulting in decrease in bustard habitat

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SRI LANKAMALLESWARA WILDLIFE SANCTUARY

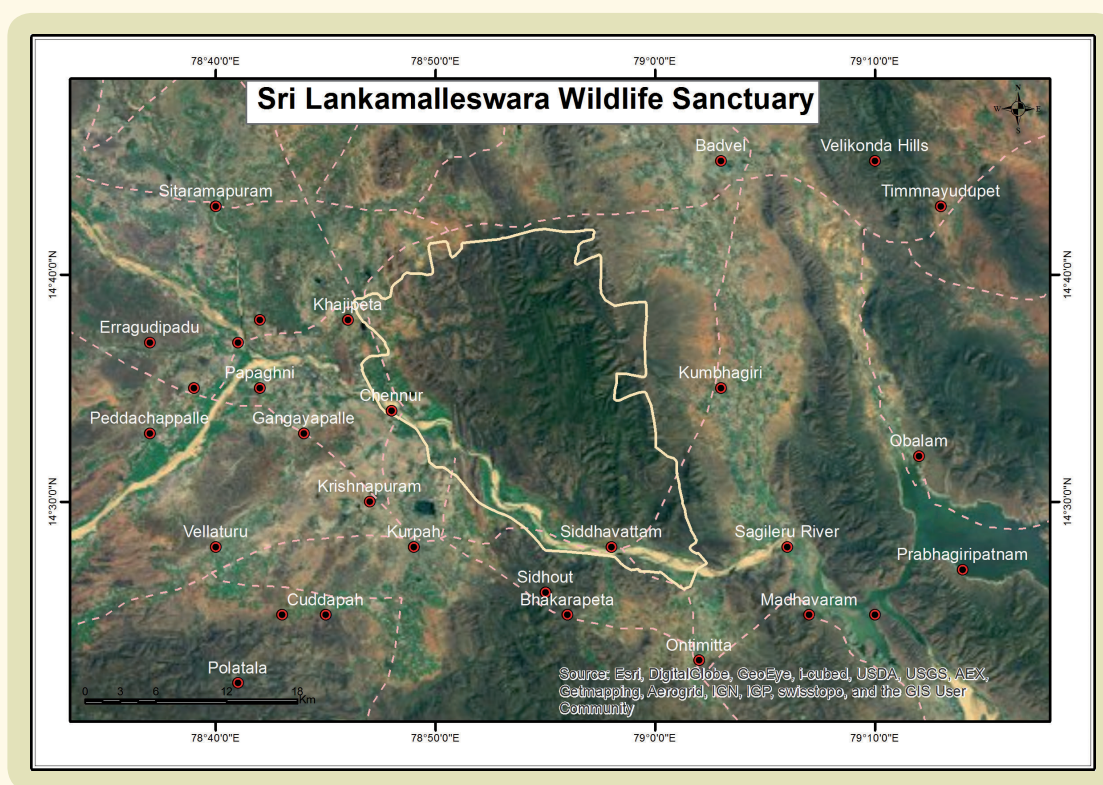
IN-AP-12

IBA Site Code	: IN-AP-12
Administrative Region (State)	: Andhra Pradesh
District	: Cuddapah
Coordinates	: 14° 38' 24" N, 78° 40' 12" E
Ownership	: State

Area	: 46,442 ha
Altitude	: 150–784 msl
Rainfall	: 800 mm
Temperature	: 21 °C to 46 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Sub-tropical Dry Deciduous Forest

IBA CRITERIA : A1 (Threatened species), A2 (Secondary Area s071: Eastern Andhra Pradesh)

PROTECTION STATUS : Wildlife Sanctuary, established October, 1988.



GENERAL DESCRIPTION

Sri Lankamalleswara Wildlife Sanctuary, situated in the Lankamalai Hills, is c. 30 km from Cuddapah. It is named after the locally famous Sri Lankamalleswara temple situated in the central part of the sanctuary. This sanctuary was declared mainly for the Critically Endangered Jerdon's Courser *Rhinoptilus bitorquatus* after its rediscovery in 1986 (Bhushan 1986). Due to its small and declining population, it is categorized as Critically Endangered in IUCN Red List (IUCN 2014).

The major types of forest in this sanctuary are Southern Tropical Thorn and Southern Tropical Dry Deciduous (Champion & Seth 1968). Although main mass of natural

vegetation belongs to the dry mixed deciduous forest type, there are several types and sub-types that differ widely with regard to their physiognomy, floristic composition and dynamism as a reflex of the variation in climate topography, soil and biotic interference. The sanctuary bears dry deciduous forest in the higher elevations and scrub forest in the plains. Major floristic components of the scrub forest are thorny species of *Acacia*, *Ziziphus*, and *Carissa*, and non-thorny species of *Cassia*, *Hardwickia*, and *Anogeissus*. The Red Sander *Pterocarpus santalinus*, endemic to Andhra Pradesh, occurs here. Most of the area of this sanctuary is covered by Red Sander species, which is in high demand for its characteristic wavy grain and other commercial values (export values)

SIMON COOK



The Critically Endangered Jerdon's Courser *Rhinoptilus bitorquatus* is perhaps the rarest bird in India. It has not been seen for the last five years of intensive work by the BNHS, RSPB, and AP Forest Department

AVIFAUNA

Nearly 200 bird species are found in this sanctuary. The Critically Endangered Jerdon's Courser was restricted to a small patch of scrub jungle within this sanctuary. Studies in early 2000s studies revealed that this bird was found in three more localities within the sanctuary (Jeganathan 2002). The call of the Jerdon's Courser was not known until it was recorded and identified in September, 2002 (Jeganathan & Wotton 2004). The identity of the species making the call was established on seeing an individual calling, and the call was recorded on the tape. After its last sighting in August, 2009, extensive camera trapping surveys have been conducted in potential areas of the sanctuary to detect the presence of this rare bird. Since 2013, a species recovery plan has been implemented to conserve Jerdon's Courser and its habitat in coordination with the Andhra Pradesh Forest Department. A recent vegetation survey revealed that the habitat of the species is considerably changed and various factors may be responsible for this alteration (S. Mali, *pers. comm.* 2013). Moderate grazing is essential for the scrub habitat of Jerdon's Courser to maintain the height of the grass. Currently, cattle tracking studies are underway to assess whether the Telugu Ganga Canal is acting as a barrier for livestock movement.

Sri Lankamalleswara Wildlife Sanctuary has been selected as an IBA on the basis of the presence of a single species. It

is a Secondary Area where a single restricted-range species, Jerdon's Courser, is found (Stattersfield *et al.* 1998).

OTHER KEY FAUNA

Although the sanctuary was declared with the sole purpose of protecting the habitat of Jerdon's Courser, many other species have benefited, perhaps more than the target species! Leopard *Panthera pardus*, Dhole or Indian Wild Dog *Cuon alpinus*, Golden Jackal *Canis aureus*, Sloth Bear *Melursus ursinus*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Chinkara *Gazella bennettii*, and Wild Boar *Sus scrofa* are seen in the forested areas. Small carnivores such as Jungle Cat *Felis chaus*, Indian Grey Mongoose *Herpestes edwardsii*, Asian Palm Civet *Paradoxurus hermaphroditus*, and Small Indian Civet *Viverricula indica* are commonly seen in the forest. Even the Grey Wolf *Canis lupus* has been sighted a couple of times since the year 2000 (P. Jeganathan, *pers. comm.* 2001). Along with mammals, reptiles such as Common Indian Monitor *Varanus bengalensis* and Indian Star Tortoise *Geochelone elegans* are frequently sighted in the sanctuary.

LAND USE

- Agriculture

THREATS AND CONSERVATION ISSUES

- Quarrying on the hills



ASAD R. RAHMAN

Construction of the Telugu Ganga canal close to the main Jerdon's Courser area has resulted in drastic change in the habitat

CRITICALLY ENDANGERED

Jerdon's Courser *Rhinoptilus bitorquatus*

NEAR THREATENED

Painted Stork *Mycteria leucocephala*
Black-headed Ibis *Threskiornis melanocephalus*

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

Black Ibis	<i>Pseudibis papillosa</i>
Jungle Bush-quail	<i>Perdica asiatica</i>
Indian Peafowl	<i>Pavo cristatus</i>
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>
Indian Courser	<i>Cursorius coromandelicus</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Sirkeer Malkoha	<i>Phaenicophaeus leschenaulti</i>
Common Indian Nightjar	<i>Caprimulgus asiaticus</i>
Indian Grey Hornbill	<i>Ocyeros birostris</i>
Black-rumped Flameback	<i>Dinopium benghalense</i>
Indian Bush-lark	<i>Mirafra erythroptera</i>
Ashy-crowned Sparrow-lark	<i>Eremopterix griseus</i>
Black-headed Cuckooshrike	<i>Coracina melanoptera</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
Common Woodshrike	<i>Tephrodornis pondicerianus</i>
White-browed Bulbul	<i>Pycnonotus luteolus</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Rufous-bellied Babbler	<i>Dumetia hyperythra</i>
Large Grey Babbler	<i>Turdoides malcolmi</i>
Jungle Babbler	<i>Turdoides striatus</i>
Yellow-billed Babbler	<i>Turdoides affinis</i>
Jungle Prinia	<i>Prinia sylvatica</i>
Ashy Prinia	<i>Prinia socialis</i>
White-browed Fantail	<i>Rhipidura aureola</i>
Brahminy Starling	<i>Sturnus pagodarum</i>
White-bellied Drongo	<i>Dicrurus caeruleus</i>
Ashy Woodswallow	<i>Artamus fuscus</i>

SECONDARY AREA S071: EASTERN ANDHRA PRADESH

Jerdon's Courser *Rhinoptilus bitorquatus*

- Developmental activities: construction of check dams, percolation ponds, trenching
- Construction of Telugu Ganga Canal
- Clearing scrub jungle for lemon farms
- Habitat alteration by introduction of exotic plants

The major land use around the sanctuary is agriculture, mainly for paddy, sunflower, and cotton and in recent times lemon farming.

The scrub jungle is being cleared to provide space for local people and for lemon farms, which is most alarming. Analysis of Landsat satellite imagery showed that the clearance of scrub jungle in this region has been happening before the beginning of field studies in 2000. Analysis of satellite images showed that between 1991 and 2000 11–15% of the scrub jungle had been cleared, especially close to human settlements (Senapathi *et al.* 2007). Collection of fuel wood, extensive livestock grazing, illegal felling of trees, bird trapping, poaching of small animals, and poisoning the waterholes to kill deer and antelopes is known to occur.

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P. Jeganathan, Sumant Mali.

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The Andhra Pradesh Forest Department has started project on the Jerdon's Courser. Intensive environmental education campaign was done by the forest department

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SRI PENUSULA NARASIMHA WILDLIFE SANCTUARY

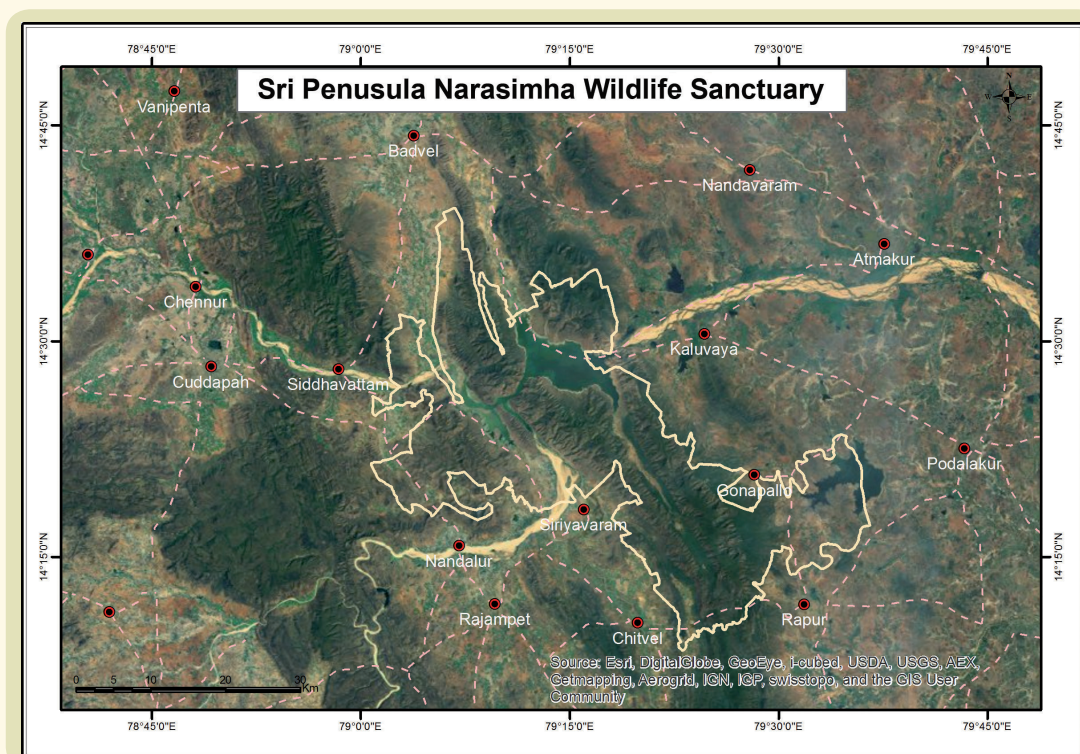
IN-AP-13

IBA Site Code	: IN-AP-13
Administrative Region (State)	: Andhra Pradesh
District	: Nellore, Cuddapah
Coordinates	: 14° 00' 33" N, 79° 27' 50" E
Ownership	: State
Area	: 103,085 ha

Altitude	: 150–800 msl
Rainfall	: 800 mm
Temperature	: 21 °C to 46 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Tropical Moist Deciduous Forest, Sub-tropical Secondary Scrub

IBA CRITERIA : A1 (Threatened species), A2 (Secondary Area s071: Eastern Andhra Pradesh; Secondary Area s072: Southern Deccan plateau)

PROTECTION STATUS : Wildlife Sanctuary, established 1997.



GENERAL DESCRIPTION

Sri Penusula Narasimha Wildlife Sanctuary, earlier known as the Velikonda Wildlife Sanctuary, spreads over the districts of Cuddapah and Nellore in Andhra Pradesh. This area encompasses Turupukonda Hills, part of the Velikonda Hill range, Somasila Dam, and Kandaleru reservoir. This area was proposed as the Velikonda Wildlife Sanctuary soon after the sightings of the Critically Endangered Jerdon's Courser on the western slopes of Turupukonda Hills (Bhushan 1994), but it was declared only after about 10 years as Sri Penusula Narasimha Wildlife Sanctuary.

This IBA site contains Moist Deciduous Forest, and Dry Thorn Forest on the foothills of Velikonda Hill range, apart from *Euphorbia* scrub and monoculture plantation, especially of *Eucalyptus* and *Terminalia arjuna*.

AVIFAUNA

Sixty-eight bird species have been recorded in this sanctuary (Jeganathan 2003), of which three species fall under Biome 10, and 16 species under Biome 11, while two are restricted-range species. Jerdon's Courser *Rhinoptilus bitorquatus* was reported from this sanctuary in 1986 (Bhushan 1994) and Yellow-throated Bulbul *Pycnonotus xantholaemus* was recorded very recently (P. Jegannathan, pers. comm. 2003).

OTHER KEY FAUNA

Leopard *Panthera pardus*, Sloth Bear *Melursus ursinus*, Cheetal *Axis axis*, Sambar *Rusa unicolor*, Chinkara *Gazella bennettii*, and Wild Boar *Sus scrofa* are seen in the forested areas. Grey Wolf *Canis lupus* has been reported, along



ASAD R. RAHMANI

Good dry scrub is present in Penusula Narasimha Wildlife Sanctuary, but no Jerdon's Courser has been detected in recent years

with Golden Jackal *Canis aureus* and Indian Fox *Vulpes bengalensis* (Jeganathan 2003).

CRITICALLY ENDANGERED

Jerdon's Courser *Rhinoptilus bitorquatus*

VULNERABLE

Yellow-throated Bulbul *Pycnonotus xantholaemus*

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

Jungle Bush-quail	<i>Perdica asiatica</i>
Indian Peafowl	<i>Pavo cristatus</i>
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Sirkeer Malkoha	<i>Phaenicophaeus leschenaulti</i>
Common Indian Nightjar	<i>Caprimulgus asiaticus</i>
Indian Grey Hornbill	<i>Ocyrceros birostris</i>
Black-rumped Flameback	<i>Dinopium benghalense</i>
Indian Bush-lark	<i>Mirafra erythroptera</i>
Ashy-crowned Sparrow-lark	<i>Eremopterix griseus</i>
Black-headed Cuckooshrike	<i>Coracina melanoptera</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
Common Woodshrike	<i>Tephrodornis pondicerianus</i>
White-browed Bulbul	<i>Pycnonotus luteolus</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Large Grey Babbler	<i>Turdoides malcolmi</i>
Jungle Babbler	<i>Turdoides striatus</i>
White-headed or Yellow-billed Babbler	<i>Turdoides affinis</i>
Jungle Prinia	<i>Prinia sylvatica</i>
Ashy Prinia	<i>Prinia socialis</i>
White-browed Fantail	<i>Rhipidura aureola</i>
Brahminy Starling	<i>Sturnus pagodarum</i>
White-bellied Drongo	<i>Dicurus caerulescens</i>
Ashy Woodswallow	<i>Artamus fuscus</i>

SECONDARY AREA S071: EASTERN ANDHRA PRADESH

Jerdon's Courser *Rhinoptilus bitorquatus*

SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU

Yellow-throated Bulbul *Pycnonotus xantholaemus*

LAND USE

- Nature conservation
- Aquaculture
- Agriculture

THREATS AND CONSERVATION ISSUES

- Clearance of scrub jungle habitat
- Construction of dams and reservoirs
- Quarrying on the hills
- Illegal felling
- Construction of roads inside the sanctuary leading to Sri Penusula Narasimha Swamy temple

Sri Penusula Narasimha Swamy temple inside the sanctuary attracts large numbers of pilgrims, especially during festivals. Disposal of non-degradable litter and plastic bags is a major conservation problem. Illegal felling is common and increases during the pilgrimage period. The proposal to increase the height of the Somasila Dam and extend the Kandeleru reservoir will result in further submergence of forest area inside the sanctuary. Clearing the scrub jungle habitat for lemon farming and monoculture plantations is another issue that needs to be addressed.

KEY CONTRIBUTOR

Panchapakesan Jeganathan

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SRI VENKATESWARA NATIONAL PARK AND WILDLIFE SANCTUARY

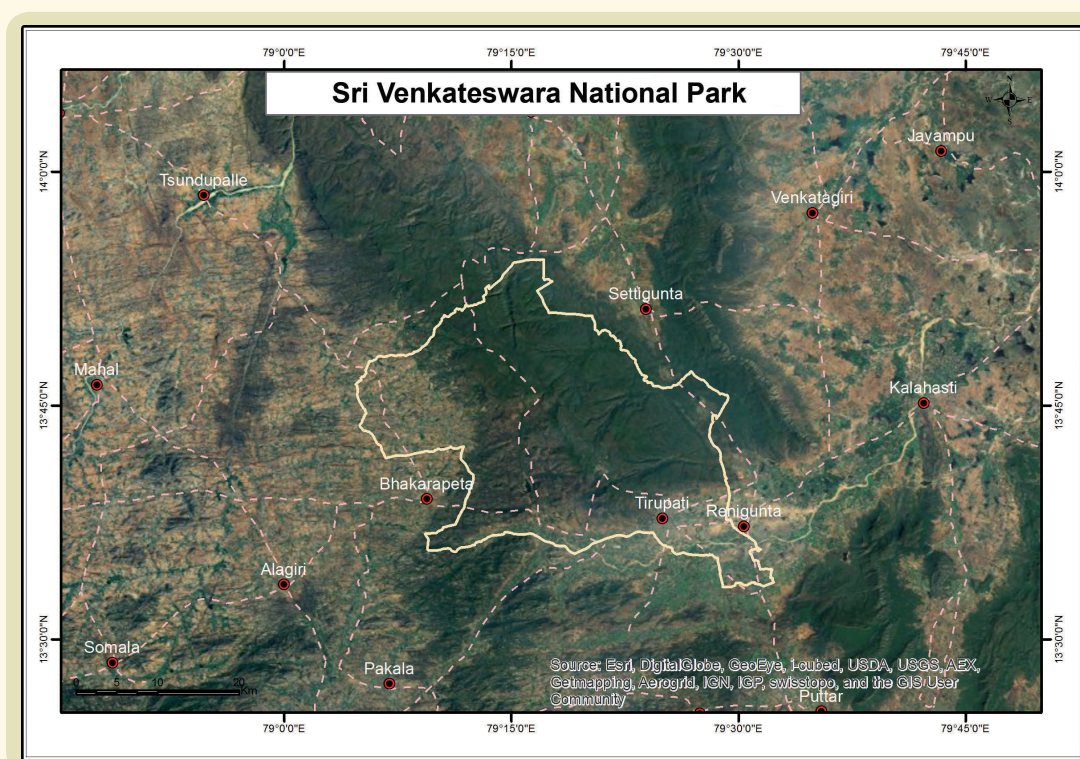
IN-AP-14

IBA Site Code	: IN-AP-14
Administrative Region (State)	: Andhra Pradesh
District	: Chittoor, Cuddapah
Coordinates	: 13° 50' 41" N, 79° 24' 48" E
Ownership	: State

Area	: 50,694 ha
Altitude	: 150–1,130 msl
Rainfall	: 900 mm
Temperature	: 12 °C to 44 °C
Biogeographic Zone	: Deccan Peninsula
Habitats	: Tropical Dry Deciduous Forest

IBA CRITERIA : A1 (Threatened species), A2 (Secondary Area s072: Southern Deccan plateau)

PROTECTION STATUS : National Park, established September, 1989.



GENERAL DESCRIPTION

Sri Venkateswara National Park (35,362 ha) and Wildlife Sanctuary (15,332 ha), located in southern Eastern Ghats, are spread over the Seshachalam hills of Cuddapah district and Tirumala hills of Chittoor district. The elevation ranges from 150 m to 1,130 m. The terrain is undulating, with deep forest-covered valleys. Most of the rainfall is received from the northeast monsoon and a little from the southwest monsoon. The area has about 1,500 vascular plant species belonging to 174 families, of which many are endemic (Anand Mohan 2000). The vegetation is a unique mix of Dry Deciduous and Moist Deciduous types. This IBA is home to seven endemic plant species: *Cycas beddomei*, *Pterocarpus santalinus*, *Terminalia pallida*, *Syzygium alternifolium*, *Shorea tambaggia*, and *Boswellia ovalifoliolata*.

AVIFAUNA

Anand Mohan (2000) identified 178 species of birds from this area. The globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus* is seen here (BirdLife International 2001). During BNHS ringing camps in 1989 and 1998–1999, two Yellow-throated Bulbuls were ringed each time (S. Balachandran, *pers. comm.* 2002). Another interesting record from this site is the presence of Large Hawk-Cuckoo *Hierococcyx sparveroides* (Pittie & Balachandran 2002), the first record from Andhra Pradesh state. This area is extremely important due to its location at the junction of Eastern and Western Ghats, therefore it has been selected as an IBA.

Another interesting record is of Grey-fronted Green-pigeon *Treron affinis*, earlier considered as a subspecies of

Pompadour Green Pigeon *Treron pompadora*, a bird of the Himalaya and the Western Ghats (Grimmett *et al.* 1999), and now a full species confined to the Western Ghats (Rasmussen & Anderton 2005, 2012; del Hoyo & Collar 2014) is quite common in this IBA (Pittie & Balachandran 2002).

White-rumped *Gyps bengalensis* and Long-billed *Gyps indicus* Vultures were fairly common 20 years ago but there is no recent record. However, the Endangered Egyptian Vulture *Neophron percnopterus* is occasionally seen,

The site lies in Biome 11 (Indo-Malayan Tropical Dry Zone) in which BirdLife International (undated) has listed 59 species which represent this biome bird assemblage. Of these, 30 species have been identified here, further proving the importance of the site for conservation. Interestingly, four species that are listed under Biome 10 (Indian Peninsula Tropical Moist Forest) are also found here. They are Blue-faced Malkoha *Phaenicophaeus viridirostris*, Yellow-browed Bulbul *Iole indica*, Indian Scimitar-babbler *Pomatorhinus horsfieldii*, and Loten's Sunbird *Nectarinia lotenia*.

OTHER KEY FAUNA

In 1984, the Asiatic Elephant *Elephas maximus*, not seen in Andhra Pradesh for nearly 300 years, reappeared in the southern part of Chittoor district. In 1993, a breakaway herd of five individuals moved to the Chamala Valley of Tirumala forests in this IBA (Rao 1993).

Till now, Tiger *Panthera tigris* has not been reported from this site, but Leopard *Panthera pardus* is quite common, along with the Wild Dog or Dhole *Cuon alpinus*. Other predators include Striped Hyaena *Hyaena hyaena*, Golden Jackal *Canis aureus*, Indian Fox *Vulpes bengalensis*, Small Indian Civet *Viverricula indica*, and Jungle Cat *Felis chaus*. Sloth Bear *Melursus ursinus* is frequently encountered. Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, Mouse Deer *Moschiola indica*, Barking Deer *Muntiacus muntjak*, Four-horned Antelope *Tetracerus quadricornis*, and Wild Boar *Sus scrofa* are the main ungulates. The nocturnal Slender Loris *Loris lydekkerianus* could be common but is seldom seen. Indian Giant Squirrel *Ratufa indica* and Tree Shrew *Anathana ellioti* are other interesting species.

Among reptiles, the most interesting species is the Draco or Gliding Lizard *Draco dussumieri*, found in some deep forested valleys (Balachandran & Pittie 2000). This species primarily inhabits evergreen biotopes in the Western Ghats (Daniel 2002), therefore its presence in the southern Eastern Ghats is interesting from the biogeographical point of view. *Draco* is an example of the Malayan element in the fauna of southern India (Daniel 2002).

Another important reptile of this IBA is the Golden Gecko *Calodactylodes aureus*. Originally reported from rocky ravines in the Eastern Ghats, the Golden Gecko was rediscovered from the same area in 1985 (Daniel *et al.* 1986). It is now known to be widely distributed and was

ENDANGERED

Egyptian Vulture	<i>Neophron percnopterus</i>
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VULNERABLE

Asian Woollyneck	<i>Ciconia episcopus</i>
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>

NEAR THREATENED

Oriental Darter	<i>Anhinga melanogaster</i>
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>
Painted Stork	<i>Mycteria leucocephala</i>
Ferruginous Duck	<i>Aythya nyroca</i>
Pallid Harrier	<i>Circus macrourus</i>
Great Thick-knee	<i>Esacus recurvirostris</i>

BIOME-11: INDO-MALAYAN TROPICAL DRY ZONE

Red-naped Ibis	<i>Pseudibis papillosa</i>
Long-billed Vulture	<i>Gyps indicus</i>
Jungle Bush-quail	<i>Perdica asiatica</i>
Yellow-wattled Lapwing	<i>Vanellus malabaricus</i>
Yellow-footed Green-pigeon	<i>Treron phoenicopterus</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Indian Nightjar	<i>Caprimulgus asiaticus</i>
Brown-headed Barbet	<i>Megalaima zeylanica</i>
Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>
Black-rumped Flameback	<i>Dinopium benghalense</i>
Indian Lark	<i>Mirafra erythroptera</i>
Rufous-winged Lark	<i>Mirafra assamica</i>
Ashy-crowned Sparrow-lark	<i>Eremopterix grisea</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
White-browed Bulbul	<i>Pycnonotus luteolus</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Tawny-bellied Babbler	<i>Dumetia hyperythra</i>
Large Grey Babbler	<i>Turdoides malcolmi</i>
Jungle Babbler	<i>Turdoides striata</i>
Ashy Prinia	<i>Prinia socialis</i>
White-browed Fantail	<i>Rhipidura aureola</i>
Brahminy Starling	<i>Sturnus pagodarum</i>
White-bellied Drongo	<i>Dicrurus caerulescens</i>
Ashy Woodswallow	<i>Artamus fuscus</i>

SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU

Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>
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recently recorded in the Western Ghats of Karnataka (Ashok Captain, *pers. comm.* to J.C. Daniel).

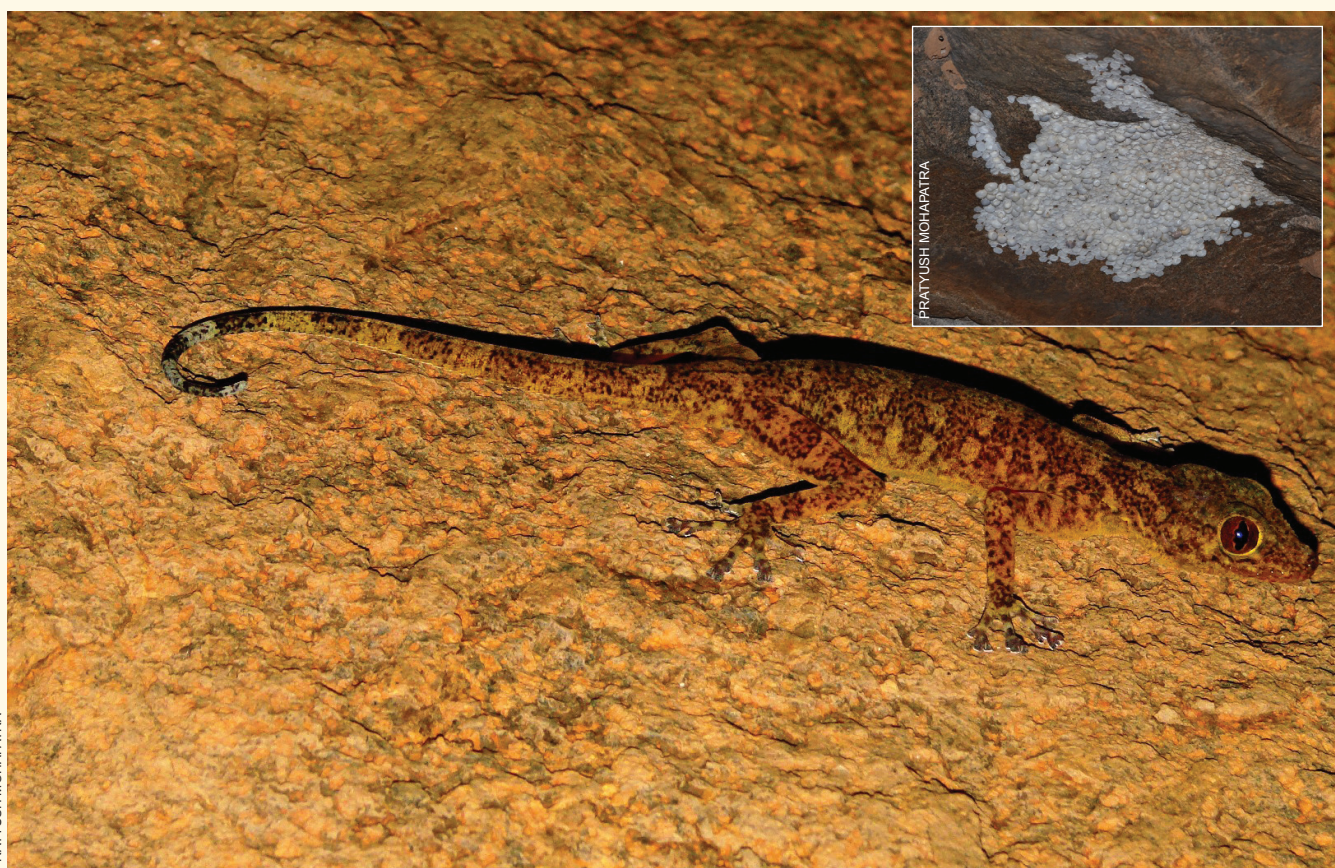
LAND USE

- Nature conservation
- Agriculture

THREATS AND CONSERVATION ISSUES

- Construction of roads and dam
- Quarrying on the hills

The Andhra Pradesh State Highway Project (APSHP) is in the process of upgrading its state highways and major district roads, partly supported by the World Bank. This includes the construction of the Warangal-Pollacolu road which passes close to the western boundary of this IBA. Also, the Indian Board for Wildlife has, after laying down



IBAs are rightly called Important Bird and Biodiversity Areas as they protect all taxa. For example, very good population of Golden Gecko *Calodactylodes aureus* is present in Sri Venkateswara Wildlife Sanctuary (an IBA) where it was first rediscovered in 1985. Since then, it has been found in many places. It attaches eggs on the roof of small damp caves and tunnels.

conditions, allowed the construction of the Kapil Teerthan Dam inside Sri Venkateswara WLS by the Andhra Pradesh Government and the Tirumala Tirupati Devasthanam. Both these constructions raise concerns over the potential impact of the road and the dam on the habitats and wildlife in the national park (*Protected Area Update*: Issues No. 13 & 45).

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P. Jeganathan, S. Balachandran.

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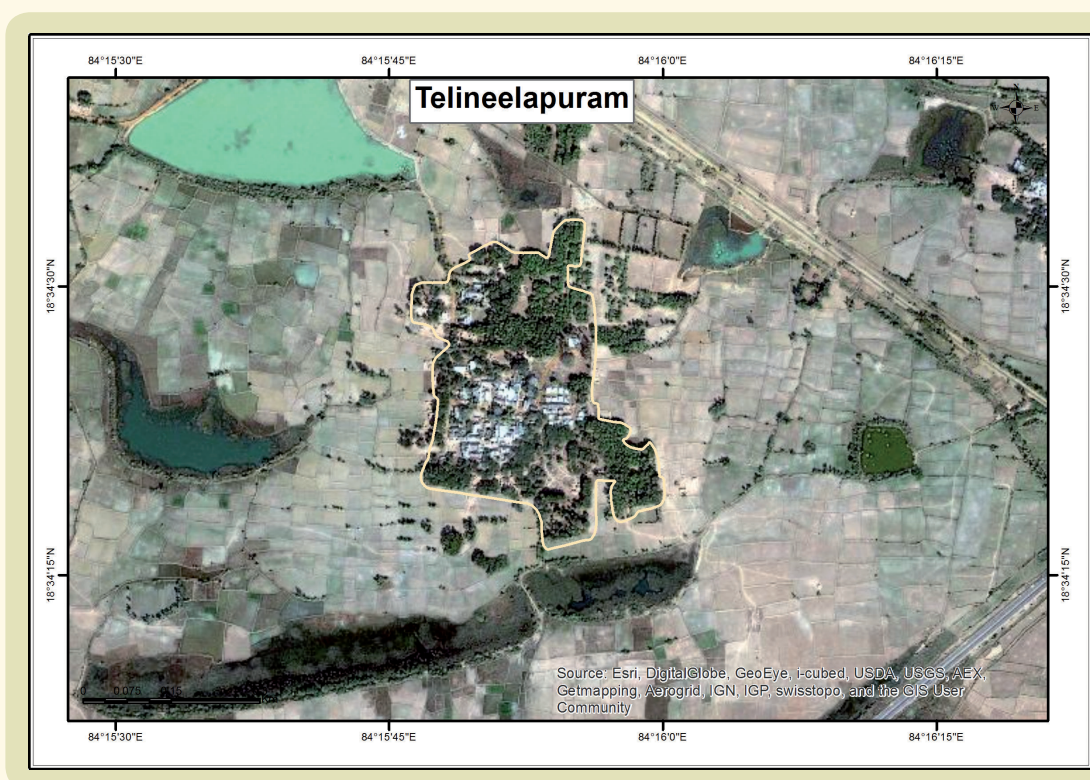
TELINEELAPURAM

IN-AP-15

IBA Site Code	: IN-AP-15	Area	: 460 ha
Administrative Region (State)	: Andhra Pradesh	Altitude	: 27 msl
District	: Srikakulam	Rainfall	: Not available
Coordinates	: 19° 07' 00" N, 84° 40' 60" E	Temperature	: Not available
Ownership	: Gram Panchayat (Village Council)	Biogeographic Zone	: Deccan Peninsula
		Habitats	: Freshwater Swamp

IBA CRITERIA : A1 (Threatened Species)

PROTECTION STATUS : Not officially protected. Declared Biodiversity Heritage Site.



GENERAL DESCRIPTION

Telineelapuram is located c. 5 km east of Tekkali town in Srikakulam district in Andhra Pradesh. Telineelapuram is a twin village of Rajagopalapuram. Rajagopalapuram is under Vijjavaram *panchayathi* (village council). The Telineelapuram *gram panchayat* (village council) governs four villages: Telineelapuram (460 ha), Viswanadhapuram and Vemalavada (410 ha), and Srirangam (56.3 ha). Very large numbers of Spot-billed Pelican *Pelecanus philippensis* and Painted Stork *Mycteria leucocephala* breed in these villages, mainly on *Prosopis chilensis* trees. Some nests are also found on *Tamarindus indica* and *Enterolobium saman*.

Common trees of human habitations, such as *Azadirachta*

indica, *Tamarindus indica*, *Enterolobium saman*, and the introduced *Prosopis chilensis* are widespread at the site.

Telineelapuram has been declared as a Biodiversity Heritage Site by the Andhra Pradesh Biodiversity Board.

AVIFAUNA

This breeding colony is surviving mainly because of the protection provided by villagers, who consider the birds sacred and auspicious. If the birds fail to come for breeding (as in drought years), villagers believe that harm will come to them. In December, 2013, Mrutyumjaya Rao counted 170 nests of Spot-billed Pelican and 304 nests of Painted Stork at Telineelapuram. In December, 2014, the number was 194 and 290 respectively (Visweswara Rao, *pers. comm.* 2014).

VULNERABLE

Sarus Crane *Grus antigone*

NEAR THREATENED

Spot-billed Pelican *Pelecanus philippensis*

Painted Stork *Mycteria leucocephala*

The pelicans breed on four large *Tamarindus indica* trees and one *Ficus* tree, while the Painted Storks breed mainly on bamboo and *Prosopis chilensis*. Their main foraging ground is at Kakarapalli creek, locally known as Kakarapalli *parras*, located c. 10 km from the Telineelapuram heronry. The creek spreads over 1,000 ha and fills up with sea water during high tide. Other major feeding and resting areas are Tekkali creek between Bhavanapadu, Meghavaram, and Kakarapalli. The Telineelapuram and Naupada swamps and their surroundings are a refuge for c. 100 bird species (Bishnoi 2013).

Kannan & Manakadan (2005), during their surveys from 2002 to 2004, found c. 100 individuals of Spot-billed Pelican. In December, 2002, they found 59 birds, and in December, 2003, 95 adults and 84 immatures were seen. In January, 2004, 200 individuals were counted.

There is an interesting record of Sarus Crane *Grus antigone* from this IBA. There were unconfirmed records, but in January, 2006, Rao (2007) saw one bird in a paddyfield near Telineelapuram.

OTHER KEY FAUNA

There is no fauna of any conservation significance, as the IBA site is located in a village.

LAND USE

- Agriculture
- Fishing

THREATS AND CONSERVATION ISSUES

- Unregulated and insensitive tourism
- Poaching outside the villages
- Excessive fishing

The village community has been protecting the nesting colony for many generations, but once it came into the limelight, the Forest Department took over to give legal protection to the birds and to the nesting site. It has now become quite popular among birdwatchers and tourists. Some of the visitors go too close to the nests and disturb them. Tourism has to be regulated and, if necessary, prohibited during the early stages when the chicks are small. Unfortunately, the Forest Department has constructed a watchtower very close to the nesting trees. This should be demolished and a new tower constructed a little further.

As the villagers actively protect the birds, the Forest Department, with local NGOs and the village council, should spend funds to develop a bird rescue and rehabilitation centre, besides building watchtowers. Facilities should be



DHRIITMAN MUKHERJEE

The nesting colonies of pelican, Painted Stork, and other birds in Telineelapuram and nearby villages are fine examples of community conserved areas. Andhra Pradesh Biodiversity Board has declared Telineelapuram as a Biodiversity Heritage Site



DRITIMAN MUKHERJEE

Sometimes, up to 200 Spot-billed Pelicans are seen in Telineelapuram where they come for breeding

developed to rehabilitate chicks which fall out of the nests and are abandoned.

Visakha Society for Prevention of Cruelty to Animals, based in Visakhapatnam, has been campaigning against poaching of birds in and around this site. The birds are totally protected inside the villages, but while foraging in the surrounding wetlands, they fall prey to poachers and trappers.

In October, 2013, the east coast of India was hit by Cyclone Phailin that resulted in large-scale mortality of birds. According to the Forest Department, nearly 200 young ones of Painted Stork and Spot-billed Pelican were rescued by them.

However, the biggest danger to this breeding colony is the usurpation of their main foraging ground in Naupada by a thermal power plant. In 2007, the Government of Andhra Pradesh identified 3,409.93 acres of land for a thermal power plant of the Andhra Pradesh Industrial Infrastructure Corporation Limited (APIIC Ltd) in Srikakulam district. An Environmental Impact Assessment (EIA) was conducted by B.S. ENVI-TECH Pvt. Ltd, Hyderabad which had many shortcomings: it was carried out from March, 2007 to May, 2007, i.e, summer months when the marsh/swamp has the least amount of water, and most of the area is used for cattle grazing. Therefore, conducting studies in summer when water level is least and migratory birds are not

present excludes this crucial faunal biodiversity, thereby underestimating the impact of the project. There were many mistakes and wrong statements in the EIA report.

The final EIA report was placed for the consideration of the Environment Appraisal Committee (EAC) for the project in its 24th meeting held on June 11–12, 2008. The abovementioned shortcomings in the EIA report were highlighted by Dr. Asha Rajvanshi of the Wildlife Institute of India during the consideration of the project by the EAC.

In response to the directives of the National Board for Wildlife, a team comprising Dr. Asad Rahmani (BNHS) and Dr. Asha Rajvanshi (WII), undertook a site visit on November 16–17, 2008 and gave the following recommendations:

a) M/s East Coast Energy Pvt. Ltd should not have undertaken development on this site and should vacate this ecologically important wetland which should be declared as a Conservation Reserve in its entirety. Several procedural lapses together have however limited the benefits of adopting the most preferred options of securing conservation outcomes in this site. Earthwork on site has already led to a situation of non-reversibility of some of the ecological impacts (e.g., already drained out areas that have been elevated by filling these).

b) Considering the fact that Environment Appraisal Committee of MoEF for Thermal Power has granted clearance, the project authorities will have to demonstrate

utmost seriousness in avoiding large-scale destruction of the wetland areas surrounding the plant that support many bird species of conservation importance, offer livelihood support to the local communities, and sustain traditional agriculture practices. Serious efforts will also have to be made for reducing their ecological footprint by ensuring strong and effective measures to reduce and remedy the impacts that could have been prevented had the site not been located here for development.

c) Reduction in land requirement for filling and raising of land to a maximum of 1,000 acres within the project area strictly for only essential establishments as has been agreed upon during the discussions with us. This should be established by revising the plans currently available with East Coast Energy. A written assurance should be given by East Coast Energy that no additional area will be required by them in the future.

d) The wetland area in the remaining 1,050 acres (already allocated to East Coast Energy) should remain untouched and be protected following the guidelines that will have to be developed involving wetland experts from WII, SACON, WWF, BNHS, and universities. No new company should be allowed to take up any land in the wetland and Naupada swamp.

e) No development of jetty now or in future should be proposed and alternative means of transporting the coal using the existing port facilities in Visakhapatnam should be opted.

f) The wetland areas falling in East Coast Energy plant area should be interconnected with the remaining natural swamp to overcome some of the impacts on drainage resulting from disconnected parcels of marshland that have been already created due to land filling of different areas within the project area.

g) Mandate of the Conservation Cell of East Coast should be redefined to incorporate proposed action plans, allocation of funds for conservation-related actions including those for offsetting the damage already done to the wetland and for undertaking short-term and long-term monitoring.

h) The Conservation Cell of East Coast should take up the conservation and protection of the Naupada-Meghavaram swamp under the integrated plan for conservation of all wetlands in their area of operation.

i) A statement of commitment from project authorities to follow the suggested actions should be obtained to ensure the proposed safeguards.

The following actions are required to be taken by the State and/or Central Government:

a) The remaining wetland should be given the highest level of protection by declaring it as a Conservation Reserve and Important Bird Area and its scientific management on

lines that will ensure the long-term prospects of conserving the ecological values of this wetland.

Some of the specific steps that are required by the Government include:

1. Policy directives for protection of wetlands outside PAs and forests are urgently needed to secure the long-term values of conservation for wildlife and human well-being.

2. Other wetland areas of conservation importance within Andhra and APIIC should be mapped and identified by competent authorities, including wetland experts of WII, BNHS, SACON, Wetland International India Office, Wetland Division of MoEF, Wetland Division of WWF, and others.

3. If removing the power plant is not undertaken, the remaining area should be declared as a Conservation Reserve. The district administration and the State Forest Department should quickly complete the physical survey of the area and declare all the remaining areas as Conservation Reserve and develop a Management Plan, in collaboration with wetland experts and local communities. The cost of preparing the Management Plan should be borne by the project proponent. They should also set aside a corpus fund (5% of the project cost) to be handled by a Management Committee.

4. No other wetland should be given to APIIC or any other developmental agency for industrial development. For instance, there is a plan to construct another thermal power plant in Sompeta wetland. The local people are already opposing this plan. The proposal to develop a thermal power plant in Sompeta should be cancelled outright.

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V. Kannan, Asad R. Rahmani.

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UPPALAPADU

IN-AP-16

IBA Site Code : IN-AP-16

Administrative Region : Andhra Pradesh
(State)

District : Guntur

Coordinates : 16° 16' 26" N, 80° 21' 58" E

Ownership : Gram Panchayat (Village Council)

Area : 15 ha

Altitude : 33 msl

Rainfall : Not available

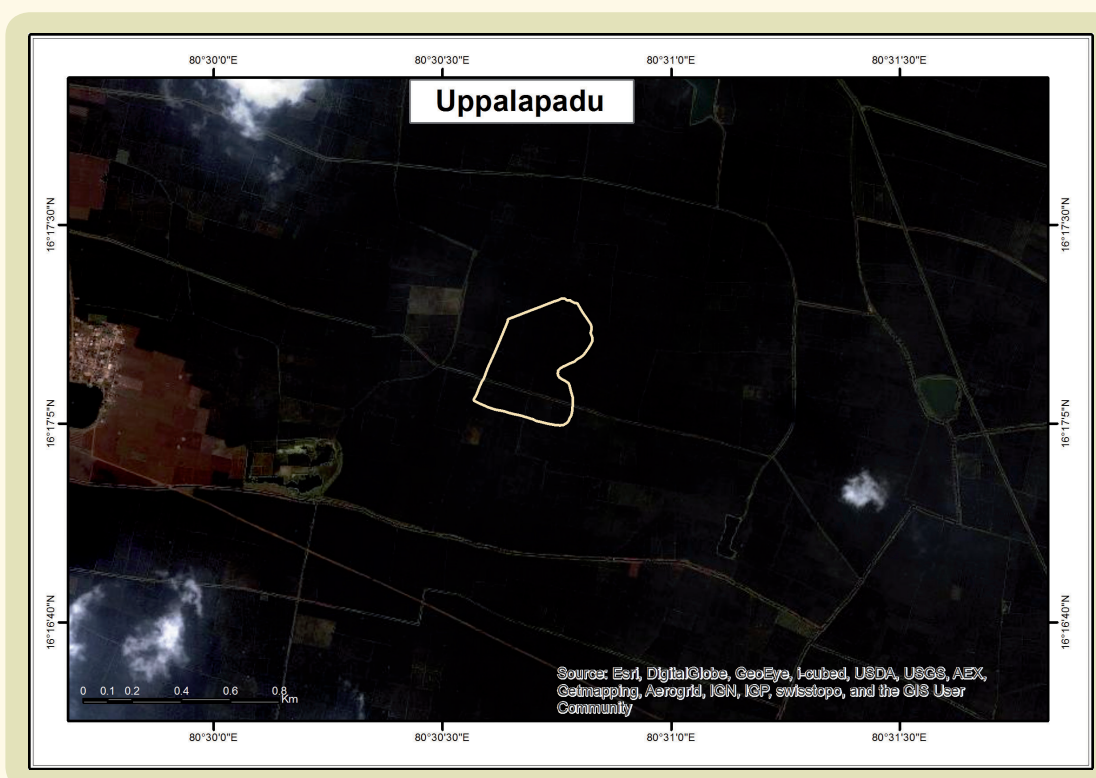
Temperature : Not available

Biogeographic Zone : Deccan Peninsula

Habitat : Freshwater Swamp

IBA CRITERIA : A1 (Threatened species), A4i (1% biogeographic population), A4iii ($\geq 20,000$ waterbirds)

PROTECTION STATUS : Not officially protected. Declared Biodiversity Heritage Site.



GENERAL DESCRIPTION

Uppalapadu, a freshwater tank situated in Uppalapadu village under *gram panchayat* revenue land, is small but very important for the globally Threatened Spot-billed Pelican *Pelecanus philippensis*. The depth of the tank is c. 3 m. Uppalapadu is c. 8 km from Guntur town. The pelicanry is of recent origin, and nesting was first recorded in the winter of 2000 (Rao & Kumar 2000).

Uppalapaddu has been declared as a Biodiversity Heritage Site by the Andhra Pradesh Biodiversity Board.

Islam & Rahmani (2008) recommended Uppalapaddu as a Ramsar Site as it fulfills Ramsar Criteria 2 (wetland supports threatened ecological communities), Criteria 4 (wetland provides refuge during adverse conditions to

threatened species), Criteria 5 (wetland regularly supports 20,000 or more waterbirds), and Criteria 6 (wetland regularly supports 1% of the individuals in a population of one species or subspecies).

AVIFAUNA

In 1999, Asian Openbill *Anastomus oscitans* and Black-headed Ibis *Threskiornis melanocephalus* first arrived in Uppalapadu and then the Spot-billed Pelican, Glossy Ibis *Plegadis falcinellus*, and Little Cormorant *Phalacrocorax niger*. They started breeding on large branches of *Prosopis chilensis* trees (K. Mrutyumjaya Rao, *pers. comm.* 2002).

In October, 2001, 60 pairs of pelicans were counted and 600 nests of Asian Openbill were seen. In December, 2002,

Manakadan & Kannan (2003) recorded a total of 244 pelicans and counted 114 nests. In 2006, more than 1,500 Spot-billed Pelican, 2,500 Painted Stork, and over 5,000 Asian Openbill were reported (Taher 2007). The Oriental Darter, another Near Threatened species, also breeds here. Taher (2007) has given figures of number of birds seen and number of nests. In 2008, Sheeba & Vijayan (2011) recorded a Lesser Adjutant *Leptoptilos javanicus* from this IBA on three occasions.

As the birds became established in the area, the villagers could not bear the increasing smell of guano. They also complained that the tank water was getting polluted due to the excreta and fish dropped by these birds. Some villagers uprooted trees to stop the birds breeding there, but others protested, so this was stopped. K. Mrutyumjaya Rao with the help of people's representative M. Pedarathaiah (then Member of Legislative Assembly), Peddi Appaji (the then village president), and many villagers (Seetharamaiah, M. Kishore, N. Vamsi, N. Siva and M. Narendra), other village heads and bird lovers, stopped disturbance to these birds and convinced the villagers to leave the birds alone. On the request of villagers, the district authorities agreed to provide an alternative supply of water, but till now this has not been done even after ten years, resulting in resentment, as a result of which, two years ago, the entire vegetation around the pond was axed to prevent birds nesting in the area (K. Mrutyumjaya Rao, *in litt.* 2014).

It is apparent that all the birds that come to Uppalapadu do not nest here, as the population figures do not match with either number of pairs or number of nests. A detailed study of birds of Uppalapadu is required.

VULNERABLE

Lesser Adjutant	<i>Leptoptilos javanicus</i>
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NEAR THREATENED

Spot-billed Pelican	<i>Pelecanus philippensis</i>
Oriental Darter	<i>Anhinga melanogaster</i>
Painted Stork	<i>Mycteria leucocephala</i>
Black-headed Ibis	<i>Threskiornis melanocephalus</i>

OTHER KEY FAUNA

This small village pond does not have any fauna presently of conservation concern.

LAND USE

- Agriculture
- Fishing
- Water management

THREATS AND CONSERVATION ISSUES

- Reduction of the tank area
- Draining of the tank in summer to harvest fish
- Death of nesting trees in and around the tank due to excessive bird excrement
- Anthropogenic disturbances
- Opposition from local populace due to pollution of water by bird excrement, leading to skin disease

Originally the tank measured 30 acres, but the northern part of the tank was drained to make room for the Zilla Parishad school building. To prevent birds from polluting the water, which was used for drinking, the villagers constructed an earthen bund to isolate about half of the tank. Trees of the isolated tank were cut to discourage birds from nesting here. This effectively halved the area of the tank. Later, another portion of the tank was cleared of trees to discourage nesting. Currently, only 8 acres of the original 30 acre tank is available to birds for nesting (Taher 2007).

The most important issue is the pollution of water due to bird droppings. It is a credit to the villagers of Uppalapadu that they have already allotted 8 acres of the pond for nesting of birds, but at the same time, expect the government to supply them fresh, clean, potable water. For more than ten years, fishing in the pond has been stopped by villagers. Considering the role of villagers and popularity of Uppalapadu for tourists, the Government of India printed a special philatelic cover in December, 2009.

It is necessary to develop a good management plan for this site with the help of villagers, and to train village youths as guides.

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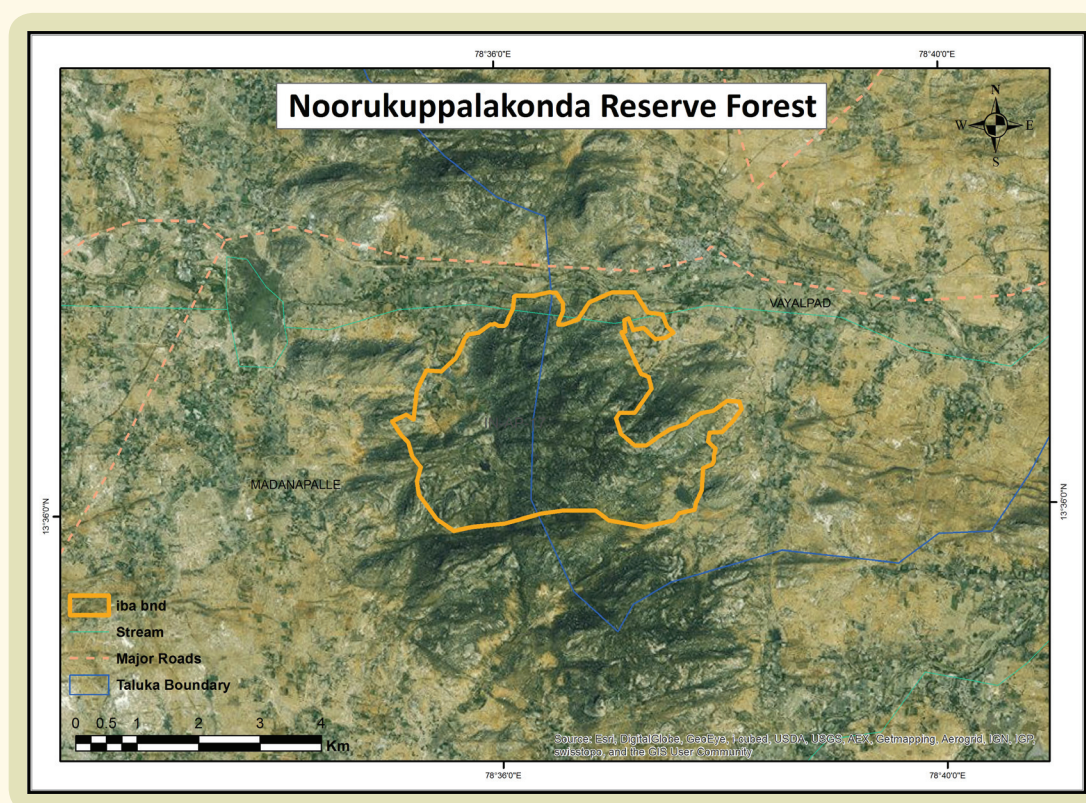
NOORUKUPPALAKONDA RESERVE FOREST

IN-AP-17

IBA Site Code	: IN-AP-17	Altitude	: 650–1,100 msl
Administrative Region	: Andhra Pradesh	Rainfall	: 750 mm
District	: Chittoor	Temperature	: 8 °C to 38 °C
Coordinates	: 13° 36' 31" N, 78° 36' 03" E	Biogeographic Zone	: Eastern Ghats
Ownership	: State	Habitats	: Tropical Mixed Dry Deciduous and Thorny Scrub Forests
Area	: 3,424 ha		

IBA CRITERIA : A1 (Threatened species), A2 (Restricted-Range species)

PROTECTION STATUS : Reserve Forest. Not officially protected.



GENERAL DESCRIPTION

Noorukuppalakonda Reserve Forest is situated in the Eastern Ghats of Chittoor district in Andhra Pradesh. It is under the jurisdiction of Madanapalle Forest Range of Chittoor (West) Forest Division. It is c. 13 km from Madanapalle on National Highway NH 205 towards Tirupati.

The vegetation comprises Tropical Mixed Dry Deciduous and Southern Thorn Forest types (Champion & Seth 1968). These hills are part of a larger landscape of broken hill ranges between the Eastern and Western Ghats that pass through the tri-junction of Andhra Pradesh, Tamil Nadu, and Karnataka. Along the foothills of Noorukuppalakonda RF are about 20 village settlements, of mostly agro-pastoralist

communities that depend on this forest resource. Some of the common tree species in this forest are *Anogeissus latifolia*, *Albizia amara*, *Dalbergia paniculata*, *Terminalia tomentosa*, *Shorea talura*, *Vitex altissima*, and *Ziziphus mauritiana*. The smaller trees include *Bauhinia racemosa*, *Erythroxylon monogynum*, *Ficus tomentosa*, *F. microcarpa*, *Cassia fistula*, *Wrightia tinctoria*, *Diospyros montana*, and *Premna tomentosa*. The most common shrub species are *Randia dumetorum*, *Plectronia parviflora*, *Dodonea viscosa*, *Diospyros chloroxylon*, *Ziziphus aenopia*, *Securinega leucopyrus*, *Dichrostachys cinerea*, and *Cassia auriculata*.

Species of high conservation significance among the flora include *Decalepis hamiltoni* (EN), *Gymnema sylvester* (VU), *Aegle marmelos* (VU), and *Aristolochia tagala* (VU).

AVIFAUNA

This reserve forest has the second highest density of the globally Threatened Yellow-throated Bulbul *Pycnonotus xantholaemus* in the district, after the IBA Horsley Hills (Suresh Jones, *pers. comm.* 2014). The Yellow-throated Bulbul is endemic to the Indian peninsula and is considered Vulnerable by BirdLife International (2001). The proposed area also has nesting sites of Egyptian Vulture *Neophron percnopterus*. Scientific survey of the nesting sites has not been done, but this is one of the important nesting areas of this Endangered species in peninsular India.

Nearly 180 species have been identified by Suresh Jones and Anant Deshwal (*pers. comm.*) between 2009 and 2013. The area is also a very good representative habitat for Biome 11 species. Out of 59 species, 28 have been reported here. Being at the junction of Western Ghats and Eastern Ghats makes this IBA quite important from the conservation point of view.

OTHER KEY FAUNA

Mammals reported from this forest patch include Four-horned Antelope *Tetracerus quadricornis*, Sloth Bear *Melursus ursinus*, Leopard *Panthera pardus*, Slender Loris *Loris lydekkerianus*, Indian Wolf *Canis lupus*,

ENDANGERED	
Egyptian Vulture	<i>Neophron percnopterus</i>
VULNERABLE	
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>
NEAR THREATENED	
Oriental Darter	<i>Anhinga melanogaster</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>
SECONDARY AREA S072: SOUTHERN DECCAN PLATEAU	
Yellow-throated Bulbul	<i>Pycnonotus xantholaemus</i>

Striped Hyaena *Hyaena hyaena*, Indian Pangolin *Manis crassicaudata*, Honey Badger *Mellivora capensis*, Rusty-spotted Cat *Prionailurus rubiginosus*, and Indian Wild Dog *Cuon alpinus*. This reserve forest is also part of a secondary elephant corridor between the Rayala Elephant Reserve and S.V. National Park within the district. Revenge killing of leopards and wolves for lifting livestock and Wild Boar *Sus scrofa* for crop-raiding is common.

This area also has a good density of Star Tortoise *Geochelone elegans* that is listed in Appendix-I of CITES. Smuggling of these tortoises is believed to be common.

LAND USE

- Reserve Forest



Boulder-strewn scrub forest characteristic of southern India is the typical habitat of Yellow-throated Bulbul *Pycnonotus xantholaemus*. Along with Horsley Hills, Noorukuppalakonda RF is one of the globally important sites for this Vulnerable species



SANTHARAM

The reserve forest of Noorukuppalakonda in Chittoor district has a high density of endemic Yellow-throated Bulbul *Pycnonotus xantholaemus*

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

White-eyed Buzzard	<i>Butastur teesa</i>
Jungle Bush-quail	<i>Perdica asiatica</i>
Painted Spurfowl	<i>Galloperdix lunulata</i>
Indian Peafowl	<i>Pavo cristatus</i>
Indian Courser	<i>Cursorius coromandelicus</i>
Yellow-footed Green-pigeon	<i>Treron phoenicoptera</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Sirkeer Malkoha	<i>Phaenicophaeus leschenaultii</i>
Mottled Wood-owl	<i>Strix ocellata</i>
Indian Nightjar	<i>Caprimulgus asiaticus</i>
Indian Grey Hornbill	<i>Ocyrocus birostris</i>
Brown-headed Barbet	<i>Megalaima zeylanica</i>
Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>
Black-rumped Flameback	<i>Dinopium benghalense</i>
White-naped Woodpecker	<i>Chrysocolaptes festivus</i>
Indian Bush-lark	<i>Mirafra erythroptera</i>
Ashy-crowned Sparrow-lark	<i>Eremopterix griseus</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
Common Woodshrike	<i>Tephrodornis pondicerianus</i>
White-browed Bulbul	<i>Pycnonotus luteolus</i>
Marshall's Iora	<i>Aegithina nigrolutea</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Large Grey Babbler	<i>Turdoides malcolmi</i>
Jungle Babbler	<i>Turdoides striatus</i>
Jungle Prinia	<i>Prinia sylvatica</i>
Ashy Prinia	<i>Prinia socialis</i>
Brahminy Starling	<i>Sturnus pagodarum</i>
White-bellied Drongo	<i>Dicrurus caerulescens</i>

THREATS AND CONSERVATION ISSUES

- Overgrazing
- Felling and lopping of trees
- Deliberate burning of the forest
- Hunting with guns, trapping and snaring
- Illicit liquor brewing at water holes

The primary land use around Noorukuppalakonda Reserve Forest is agriculture, and a major portion of it is rainfed. In the last decade, there has been a significant increase in groundwater extraction and people still cultivate water-intensive crops like tomato and paddy. Dairy farming is at an all time high and the livestock holding has further increased the pressure on the biomass resources of the forest.

The local communities traditionally hunt for subsistence, and huge pressure on the landscape by herders who regularly burn the forest are major threats to the habitats of various species, particularly Yellow-throated Bulbul. Illegal brewing of liquor close to water holes and the high number of livestock that depend on these limited water resources further add to the problems faced by wild fauna.

KEY CONTRIBUTOR

Suresh Jones

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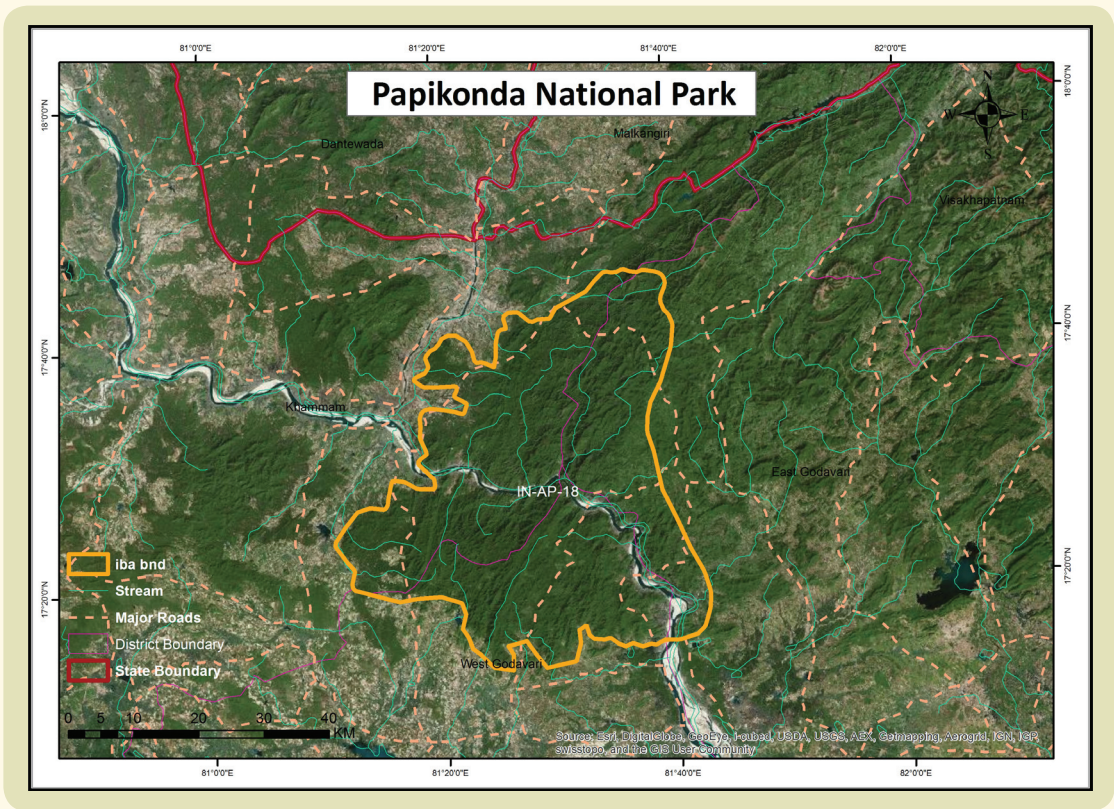
PAPIKONDA NATIONAL PARK

IN-AP-18

IBA Site Code	: IN-AP-18	Temperature	: Not available
Administrative Region	: Andhra Pradesh	Biogeographic Zone	: Deccan Peninsula
District	: East Godavari, West Godavari	Habitats	: Southern Tropical Secondary Dry Deciduous Forest, Southern Secondary Moist Mixed Deciduous Forest, Semi-evergreen Rain Forest, Dry Savannah
Coordinates	: 18° 49' 20" N to 19° 18' 14" N, 79° 54' 13" to 83° 23' 35" E		
Ownership	: State		
Area	: 1,012 sq. km		
Altitude	: 20–850 msl		
Rainfall	: 1,168 mm		

IBA CRITERIA : A1, A3 (Biome-restricted species)

PROTECTION STATUS : Wildlife Sanctuary, established July, 1978; upgraded to National Park December, 2008.



GENERAL DESCRIPTION

Papikonda National Park, located in northern Eastern Ghats, is spread over the Papi Hills and straddles the Godavari river, in East and West Godavari districts of Andhra Pradesh. The national park was earlier located in three *mandals* (administrative units) of Khammam district in Telangana, but these *mandals* are now being transferred to Andhra Pradesh following the bifurcation of Andhra Pradesh state on June 1, 2014. The elevation ranges from 20–850 msl, the terrain is mountainous and undulating,

with deep forested valleys and steep hills. The majority of the rainfall is received from the southwest monsoon between July and September. The vegetation in this IBA is a unique mix of Dry Deciduous and Moist Deciduous types, dominated by several large tree species including *Adina cordifolia*, *Schleichera oleosa*, *Vigna unguiculata*, *Pterocarpus marsupium*, *Terminalia tomentosa*, *Terminalia arjuna*, and *Anogeissus latifolia*. The area is home to several indigenous tribes such as the Konda Reddi, Konda Dora, and Koya, who have strong cultural and livelihood linkages with the area.

AVIFAUNA

Papikonda National Park lies in Biome 10 (Indian Peninsula Tropical Moist Forest) from which BirdLife International has listed 15 species which represent this biome's bird assemblage. Some important globally Threatened bird species of Papikonda include the Vulnerable Purple Wood-pigeon or Pale-capped Pigeon *Columba punicea*, Near Threatened Malabar Pied Hornbill *Anthracoceros coronatus* and Pallid Harrier *Circus macrourus*, and the Forest Owl *Heteroglaux blewetti* designated as Critically Endangered, which was recorded from the Araku Hills close to the northern boundaries of Papikonda National Park (Azeez *et al.* 2008, Kumar *et al.* 2010). However, the record of Forest Owl needs confirmation with good images.

ENDANGERED	
Black-bellied Tern	<i>Sterna acuticauda</i>
VULNERABLE	
Pale-capped Pigeon	<i>Columba punicea</i>
Yellow-throated bulbul	<i>Pycnonotus xantholaemus</i>
NEAR THREATENED	
Oriental Darter	<i>Anhinga melanogaster</i>
Pallid Harrier	<i>Circus macrourus</i>
Great Thick-knee	<i>Esacus recurvirostris</i>
River Lapwing	<i>Vanellus duvaucelii</i>
River Tern	<i>Sterna aurantia</i>
Malabar Pied Hornbill	<i>Anthracoceros coronatus</i>
Alexandrine Parakeet	<i>Psittacula eupatria</i>

Seven Biome 10 species were reported from this site. Malabar Whistling-thrush *Myophonus horsfieldii* has been reported in winter as well as monsoon, suggesting a resident population. Malabar Trogon *Harpactes fasciatus* were spotted both inside and outside the protected area (Tiger Camp, Maredumilli) multiple times. Indian Scimitar-babbler *Pomatorhinus horsfieldii* and Black-throated Munia *Lonchura kelaarti* were found inside the protected area (close to Tiger Camp).

In addition to the species mentioned above the place falls under the migration route of Amur Falcon in winter. In 2013, the satellite tagged Amur Falcon named Wokha flew over this area (http://satellitetracking.eu/inds/showmap/?check_144=144). In 2014, another falcon named Pangti flew right through the protected area (http://satellitetracking.eu/inds/showmap/?check_145=145). Potential stopover/resting points for Amur Falcon in these hills need to be investigated and protected.

OTHER KEY FAUNA

A total of 58 mammalian species, including 17 carnivores, nine herbivores, four omnivores, one insectivore, 13 bats, and 12 species of rodents are recorded from Papikonda National

BIOME 10: INDIAN PENINSULA TROPICAL MOIST FOREST

Black-throated Munia	<i>Lonchura kelaarti</i>
Indian Scimitar Babbler	<i>Pomatorhinus horsfieldii</i>
Jerdon's Nightjar	<i>Caprimulgus atripennis</i>
Loten's Sunbird	<i>Cinnyris lotenius</i>
Malabar Pied Hornbill	<i>Anthracoceros coronatus</i>
Malabar Trogon	<i>Harpactes fasciatus</i>
Malabar Whistling-thrush	<i>Myophonus horsfieldii</i>

BIOME 11: INDO-MALAYAN TROPICAL DRY ZONE

Ashy Prinia	<i>Prinia socialis</i>
Ashy Woodswallow	<i>Artamus fuscus</i>
Ashy-crowned Sparrow-Lark	<i>Eremopterix griseus</i>
Black-rumped Flameback	<i>Dinopium benghalense</i>
Brown-headed Barbet	<i>Megalaima zeylanica</i>
Chestnut-tailed Starling	<i>Sturnia malabarica</i>
Common Woodshrike	<i>Tephrodornis pondicerianus</i>
Indian Peafowl	<i>Pavo cristatus</i>
Indian Robin	<i>Saxicoloides fulicatus</i>
Jungle Babbler	<i>Turdoides striata</i>
Plum-headed Parakeet	<i>Psittacula cyanocephala</i>
Red-naped Ibis	<i>Pseudibis papillosa</i>
Small Minivet	<i>Pericrocotus cinnamomeus</i>
Tawny-bellied Babbler	<i>Dumetia hypertythra</i>
White-bellied Drongo	<i>Dicrurus caerulescens</i>
White-browed Bulbul	<i>Pycnonotus luteolus</i>
White-browed Fantail	<i>Rhipidura aureola</i>
Yellow-billed Babbler	<i>Turdoides affinis</i>
Yellow-crowned Woodpecker	<i>Dendrocopos mahrattensis</i>

Park. Carnivores include Tiger *Panthera tigris*, Leopard *Panthera pardus*, Leopard Cat *Prionailurus benghalensis*, Rusty-spotted Cat *Prionailurus rubiginosus*, Striped Hyena *Hyaena hyaena*, Asiatic Wild Dog or Dhole *Canis lupus*, Indian Grey Wolf *Canis lupus*, Golden Jackal *Canis aureus*, Indian Fox *Vulpes bengalensis*, Small Indian Civet *Viverricula indica*, Sloth Bear *Melursus ursinus*, Common Mongoose *Herpestes edwardsii*, and Ruddy Mongoose *Herpestes smithii*. Herbivores include Sambar *Rusa unicolor*, Spotted Deer *Axis axis*, Indian Muntjac or Barking Deer *Muntiacus muntjak*, Indian Mouse Deer *Moschiola indica*, Four-horned Antelope *Tetracerus quadricornis*, and Wild Boar *Sus scrofa*. The Tiger and the Indian Pangolin *Manis crassicaudata* are listed as Endangered, the Smooth-Coated Otter *Lutrogale perspicillata*, Rusty-spotted Cat, Four-horned Antelope, Gaur *Bos gaurus*, and the Sambar are listed as Vulnerable, and the Leopard, Striped Hyena, and Blackbuck are listed as Near Threatened species in the IUCN Red List. The Indian Flying Fox *Pteropus giganteus*, Greater False Vampire Bat *Megaderma lyra*, Indian Giant Squirrel *Ratufa indica*, and Tree Shrew *Anathana ellioti* are also seen here. Papikonda National Park is unique in having two species of macaque, Rhesus Macaque *Macaca mulatta* and Bonnet Macaque *Macaca radiata*, and two species of langur, the Northern Plains Grey Langur *Semnopithecus entellus* and the Southern Plains Grey

Langur *Semnopithecus dussumieri*. Rhesus Macaque and Northern Plains Grey Langur are found to the north of the Godavari, while Bonnet Macaque and Southern Plains Grey Langur are restricted to the south.

Among reptiles, the most recent discovery from Papikonda National Park is that of the Golden Gecko *Calodactyloides aureus*, which is endemic to the Eastern Ghats (Beddome 1970, Daniel *et al.* 1986, Javed *et al.* 2007). The Jeypore Ground Gecko *Geckoella jeyporensis* has also been recently rediscovered from the Visakhapatnam hills close to the northern boundaries of Papikonda National Park (Ishan *et al.* 2012). A number of newspaper reports and eyewitness accounts also strongly indicate a good population of King Cobra *Ophiophagus hannah* in the forests of Papikonda.

LAND USE

- Nature conservation
- Agriculture (seasonal rainfed and irrigated: Sorghum, Little Millet, Red Gram, Bengal Gram, Green Gram, Rice)
- Plantations (Teak, Cashew, fruit orchards)

THREAT AND CONSERVATION ISSUES

- Forest encroachment
- Hunting
- Plantations
- Road widening
- Dam building
- Mining
- Forest fires
- Invasive species

The area was under threat from Naxalites for several years and was unsafe for research and other activities. The effects of these on the flora and fauna are not known. The threat from left wing extremism has, however, decreased now and the region is once again accessible for research.

The most ominous conservation threats include expansion of commercial forest plantations (Teak and medicinal species), hunting, and forest fires set by people during the dry season, which cause forest loss and disturbance

to fauna over a large area within and outside Papikonda National Park. Many of the forest lands around the PA are also being converted to commercial plantations. The ongoing construction of the Indira Sagar Multipurpose Dam (Polavaram Dam) across the Godavari very close to the eastern boundary of the national park is causing large scale deforestation and disturbance. Similarly, several smaller dams have been constructed on streams and small rivers in the buffer zone. These threats could have a serious impact on the wildlife and habitats in and around the national park. Mining is on the increase in the neighborhood as large deposits of bauxite and limestone are present in the hills and are being identified for mining.

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Link

¹<http://www.deccanherald.com/content/321695/lizard-species-rediscovered-135-years.html>